# JOURNAL OF GAS LIGHTING, WATER SUPPLY, &c.

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## EDITORIAL NOTES—GAS, &c.

### Limitation of Gas Profits for the Rates.

OF acts of justice ever performed in the Parliamentary Committee Rooms, there occurred last week almost simultaneously two of the most momentous character, in connection with the gas section of the Salford Corporation Bill and the water section of the Oldham Corporation Bill; and what happened in respect of the latter will also have effect in the gas section. The simultaneous action in the Upper and Lower Houses, it is sincerely hoped, may be taken as indicative of Parliament having at length resolved, as local authorities come up for judgment, to put an end to the abuse that has all too long existed in dealing with the finances of their trading undertakings. The inquiry into municipal trading of not long ago revealed the widespread character of these abuses; but nothing effectual has yet been done to bring our local governors under better control in respect of them. One object of instituting the Local Legislation Committee at the opening of the present session of Parliament was to make an effort to co-ordinate the practices and statutory powers of local authorities; and one direction in which co-ordination can, with advantage, be effected, is to bring about, as quickly as possible, a limitation of the profits they may make from their trading undertakings, in the same way that limitation is rigorously applied to statutory private enterprise. We will not deal in this part of the "JOURNAL" this week with what has occurred in the case of Oldham; a short reference to the matter will be found in the final paragraph of "Notes "from Westminster" on a succeeding page. The more important pronouncement, in regard to the limitation of gas profits appropriated in aid of the rates, is that of Lord Donoughmore's Committee in the Salford case; and the decision will meet with general approval by gas men. Comment, however, should be prefaced by the remark that the Salford Gas Department has not by any means been mismanaged; and it is only on the question of profit appropriation and the inequalities it brings in its train that we are at variance with the Corporation, and all other local authorities of whom they are but an example in this matter. If the decision of Lord Donoughmore's Committee succeeds in passing through the House of Commons, the gas profits which may henceforth be transferred to the aid of the rates in Salford will be 1 per cent. on the outstanding capital. In addition, statutory obligation is put upon the Corporation to charge all the expenses of the public lighting to the lighting rate; and the amount of the Department's carry-forward is likewise limited; but a reserve fund on the ordinary lines is allowed. These, shortly stated, are the points imposing limitation; and all profits made beyond are to be applied to the reduction of the price of gas.

The principle of the restriction of the profits of municipal trading, after capital and maintenance charges have been met, is correct and equitable. In the case of gas companies working under the sliding-scale or under a maximum price, the distribution of profits is limited; and, in recent sessions of Parliament, companies have been hedged in still more by the special purposes fund, and by a prescribed maximum carry-forward. But no such restriction has been placed on municipalities, with the result that they have, by progressive stages, exercised their unbridled licence in a manner that cannot be excused, and that ought not to be longer tolerated. Look, for example, at the table on p. 321 of our issue last week. The small compilation shows that the contributions of the Birmingham Gas Department last year for public purposes amounted to the large sum of £90,890. Look again at the Manchester Gas Department, which has had as much as £60,000 taken from it in aid of the rates in a year, and makes a normal contribution of £50,000. This year it was only proposed to contribute £26,495 in aid of the rates; but the Committee have been reluctantly compelled to increase the sum to £50,000. Look at Salford, with its contribution of £320,000 in twelve years in aid of the rates within the borough. And only recently there has been prominence given in these columns to what Oldham has done in the same way, including the taking of gas without payment for public purposes. These are only a few among the outstanding instances of this violation of freedom, which freedom it is high time should be curtailed with a firm hand, in view of the inequality of taxation, and therefore injustice, that it inflicts.

The existing excesses are the result of a continuous growth from an old-time ordinance that had inception under conditions altogether different from those obtaining to-day. Many large ratepayers are not now, as formerly, patrons of municipal gas undertakings, but are of the municipal electricity concerns, which contribute little, or probably nothing, to the rates. A large proportion of gas consumers—the prepayment ones—nowadays are of the poorest in a community. Furthermore, municipal gas undertakings are constantly extending their supply area, and enlarging their business, beyond the administrative borders of the local authority. In these points, there is abundant reason for the curtailing to a specified amount—in fact, we should prefer to see the municipal profit-appropriation system completely abolished—of the profits that may be allocated to the rates within the borough. It is no new thing this limitation of profits. There are Scotch undertakings that are not allowed to make profits in excess of the needs of the undertakings. Municipal management of trading undertakings over the Border is intended to be carried on with a single eye to cheap and efficient service. Joint Gas Boards in England are not allowed to make profits; the federation of towns in the Potteries district is bringing into existence there a like policy; and Widnes and Glastonbury are confined to the amount of benefit that may be extracted from the gas undertakings, and therefore from the consumers. But in most cities and towns where there is municipal ownership of the public trading concerns, the gas undertaking has been the milch cow; and the gas consumers have patiently borne the resulting inequality. It is to be hoped they will do so no longer; but will agitate for relief, and persevere until they get it.

The municipal apologists for the existing system croak about the rates being pledged in respect of the gas-works loans. They charge very dearly for the accommodation. A Shylock never exacted more onerous terms. In many places, the plea has sufficed for the extraction of hundreds of thousands from the pockets of gas consumers—amounts, in fact, in the aggregate, equal in cases to the total of the loans raised. Yet the rates have never been called upon to bear a penny loss; and never will be. Such a contingency is more remote than ever with the wider difference than in the past between prices charged for gas and the maximum allowed. Should, however, there happen to be a deficiency in future on the trading of the gas undertaking in Salford, and the rates make it good, the new clause provides for the return to the rates of the amount from succeeding profits. So far as the security of the rates for the gas-works loans goes, it is a mere formality. The profits, on the other hand, extracted from the consumers have a corporeality that has no correspondence with the empty formality. In this connection, Lord Donoughmore's Committee thought it was their duty to legislate for a condition that suggests the prospective extinction of the gas industry, by making the out-districts before them proportionately responsible for any outstanding loans should at any time there be a total discontinuance of the use of gas. The out-districts may look with composure upon the provision, and adopt an attitude of supreme indifference to their fate. The provision is an unnecessary one; but its existence will harm no one. The only thing the gas consumers, inside and outside the borough, need worry about is that the new protective clause in all other respects may suffer no defeat in the remaining stages of the Bill.

If the out-districts of other English municipally gas-supplied cities and towns follow up the success in the Salford case (if carried through Parliament), it would not surprise

us to find it giving impetus to the formation of Gas Boards. Bearing on this point, it is clear—it was seen in the Salford case, and it has been seen in other cases—that local authorities owning gas undertakings are reluctant to allow any dismemberment of their concerns, by the sale to outside districts of the portions of the distribution plant situated therein. They would sooner give up the right to the excess price usually allowed in the outer areas. The policy of differential prices in the case of territory beyond the administrative bounds of an authority owning a gas undertaking, was to the front in the Salford proceedings. It is one that has reasonable argument on its side, when there is a limitation of the amount of profits that may be applied in relief of the borough rates, or when such appropriation is altogether disallowed. The out-district consumers, however, bearing their share of the legitimate charges upon the gas undertaking, cannot be blamed for objecting to a perennial contribution to the relief of the rates within the area of the authority in possession of the gas undertaking.

It is expected there will be an attempt on the part of Salford to get rid of the profit-limitation clause that has come upon them as a total surprise, by pleading in the Lower House that its existence in the Bill is a violation of the Standing Orders. But it is competent for the authorities of the Lower House to say that it is a case in which they will dispense with the Standing Orders. If they say it in this instance, then it will be for the Upper House to say the same thing in connection with the Oldham Bill, in which questions of finance of much the same order have been dealt with by the Local Legislation Committee of the House of Commons. But many changes are made in Private Bills by Parliament that have not been referred to in the notices of the Bills. For instance, the London Electricity Companies went last year to Parliament with an intercommunication scheme; and Parliament in the same Bill introduced clauses constituting the London County Council the purchasing authority in 1931, instead of the Borough Councils, who already possessed purchasing powers under the General Electric Lighting Acts. No notice of this was given, nor were the ratepayers asked for their consent. The power of Parliament is large; and the Salford Corporation to-day realize it. Many local authorities will anxiously watch the progress of the Corporation Bill. At the moment, it looks as though the only means of escape is the withdrawal of the whole measure; but such a course would merely mean the repetition of the fight in another session.

## On the Continent—Vertical Retort Adoption.

It is interesting to occasionally cast ones eyes abroad to see how the times are dealing with colleagues and the industry in other countries and under other governmental and working conditions. The opportunity is especially afforded by the half-yearly reports of the Imperial Continental Gas Association and the addresses, which are always illumined with good point, of the Chairman (Mr. J. Horsley Palmer) to the proprietors. Carrying on its operations in various parts of different Continental countries, the Association occupies a unique position in the world's gas industry; and it focuses within itself the results of a remarkable diversity of experiences—administrative and technical. The Directors' report and the address of the Chairman to the proprietors last Tuesday, form together excellent chapters in the technical, the commercial, and the financial history of the concern. In the commercial and financial aspects, it is ever-expanding; and in its technical history, change in magnitude and system of operation proceeds unceasingly.

In this last-named respect, it has been the privilege of the "Journal" to give to British gas engineers from time to time an account of the materialized work of the men of ability that the Association have had and have in their service. Change from old method to new has been traced; and the change still proceeds. Look at the present report. At most of the stations the mutations of time have their representation. At Antwerp, the new Hoboken works, growing up on virgin soil so far as gas production is concerned, are nearing completion, and additional producing and holder capacity is at most of the other works being brought into existence. But a particularly noticeable feature is the extension of the vertical retort system. The system has become established in a remarkable manner in the gas-works of Germany. In the operations of the Association, it was for some considerable period confined to Berlin; and Berlin passed from the experimental stage to large working installations before any of the other stations took up the new mode in carbonization. At the Mariendorf station at Berlin, in addition to previous installation, a further six settings have been completed; and the erection of a third retort-house, with fourteen settings of twelve vertical retorts, is in hand. But at other stations of the Association, substantial installations are now being made. At Aix-la-Chapelle, twenty settings of tens are going in; at Brussels, twelve settings of tens; and at Frankfort, also twelve settings of tens. This is all very significant. With the Association, the Chief Engineers at the various stations are treated as having an individuality in responsibility, and their technical views and advice meet with the greatest respect in the London Board-room. It may be taken that the installation at Aix-la-Chapelle represents the choice of the late Mr. James Drory; the installation at Brussels, that of Mr. H. Salomons; and the installation at Frankfort, that of the veteran in gas engineering Mr. William Drory. And as to Berlin, British gas engineers know, both by work and word, how Mr. Edward Körting regards the vertical retort system. In this country we have to confess to an admiration of the bold manner in which contemporary engineering judgment in Germany has gone so conspicuously in favour of the intermittent vertical retort system. And yet there is no tormenting regret that German colleagues should have led in this matter. In the spirit of true professional rivalry, we are not without hope that, just as our friends have learned of us in the past in the matter of carbonization, and just as we are learning of them in the present, they may also learn of us in connection with the vertical retort system in the future.

We will not dwell longer on the constructive technical work. There is another noteworthy feature in the operations of the Association that is both technical and administrative in character, and that is the action of the Association in constantly adding new territory lying on the borders of present supply areas. The action of the Board in this regard is philosophic. They are looking to the future, and providing for its protection and assurance. With the competition of electricity, the business of gas undertakings will have, in the time to come, to be gathered in over larger areas. The growth cannot be expected, under all the circumstances of the times, to be continuous within the old limits—either on the Continent or in this country. The Directors of the Association are devoting a material proportion of their time to the suburbs of their existing supply areas that have a prospective fertility. Concessions with outside communes are always in process of negotiation; and the distribution arteries of the undertakings are ever being carried further outwards—so much so that last year 117 miles of mains were laid. The same process of outer expansion has been a feature of British gas-works policy during recent years. But the Association are going further still. With electric lighting powers at their backs, they, where there is a demand for electric light in a suburb, take up the supply in conjunction with gas; and now they find that, at their Brussels station, it will be economical to construct a central electricity station for the purpose, and still the necessity for large new gas-works there is well above the horizon. In speaking of business development, an experience unlike that, generally speaking, of British gas undertakings in these times, is noticed in the classes of new consumers that are connected. Here, as a rule, at present, the prepayment consumers preponderate in the new connections. Of an increase of 48,325 consumers mentioned in the half-year's report of the Association, no less than 28,003 were ordinary consumers, and 20,322 were prepayment ones. The point has interest.

We will not refer here to the commercial and financial results of the half year. Those interested will turn to the report of the proceedings to read the story on their own account. There is one point of a personal nature. The Association have had in their service talented families of engineers whose names will be written large and stand perpetually in the technical annals of the great undertaking. Eloquent indeed was the tribute paid by the Chairman to the memory of the late Mr. James Drory, the Chief Engineer at Aix-la-Chapelle, who has so recently passed from the scene of his active duties. This tribute brought to light two facts that must be extraordinary in the history of industrial concerns and of official service under one corporate body. Of ten brothers forming the gifted Drory family, no less than eight have, to use Mr. Palmer's own expression, devoted their lives and work to the Association—several as Chief Engineers. Mr. James Drory served the Association

42 years. Three brothers who predeceased him, and who were also chiefs of certain principal stations of the Association, also served exactly the same period—42 years! Truth is stranger than fiction. Mr. William Drory, of Frankfort, still holds his official position, though having been in the service 54 years. The record is indeed extraordinary; but what stands out with great prominence are the places that honour and duty have ever occupied in the Drory family. The story as told by the Chairman was brief; but what a history and a record rest beneath the few sentences!

## Examinations and the Range of Knowledge.

In the last two issues of the "Journal," there have appeared the lists of questions set by the City and Guilds of London Institute Examiners in "Gas Engineering" and in "Gas "Supply"—respectively Mr. W. Doig Gibb and Mr. J. H. Brearley. From the questions candidates had ample choice of subject-matter on which to exercise themselves, to show their proficiency in the lower or higher grades of study of the art of gas-works engineering, and gas manufacture, distribution, and utilization. There can be no complaint about the range of the questions, or of the variety of subjects, or of the fair distinction made to test the knowledge of minor and major candidates by both Mr. Gibb and Mr. Brearley. But there are two or three points that, after perusing the questions, suggest themselves for a few observations. One is that marks in addition to those allotted to the questions ought, in some way, to be awarded to candidates according to the variety of subject-matter dealt with in their answers, because the greater the variety of subject-matter treated upon, the greater the evidence of the distribution of the knowledge of a candidate—from construction and functions of plant throughout processes and use. To show what we mean, let us take the questions in the ordinary grade of "Gas Engineering." There it is possible to pick out more than eight questions that most youths in a minor position in the chemical laboratory of a gas-works could answer, and though possibly not able to reply to a single constructional question or make a sketch, they would come out with honour equal to those who answer constructional and other questions, and are capable of making decent illustrative sketches. The questions for long past have indicated the position, and the very proper position, that the examiners have given to gas-works chemistry; but there is this one objection, which shows where in these examinations there may be equality of honour for inequality of knowledge.

Another point that strikes the critical reader of the questions is that it is necessary that candidates should keep themselves well posted in current technical intelligence, by following closely the information published weekly, in addition to their practical daily work, attending lectures, and studying text-books. If the examinations induce an interest on the part of students in current technical literature, this must be regarded as one of their excellent effects. There are questions in the examination lists, treating of matters that have not come under the direct experience of many British gas engineers, much less of candidates for examination. There are questions, too, upon subjects that the text-books have not overtaken. Technical history grows rapidly—more rapidly than the writing, study, and sale of gas text-books. Take, for example, question 9*a* in the Ordinary Grade of the examination in "Gas Engineering." The candidate is there asked: "If a spiral-guided [Gadd and "Mason] telescopic holder be constructed in a concrete "tank, why is it not necessary to provide radial movement "on the guide-rollers attached to the holder itself, and "equally necessary to provide this on the guide-rollers "fixed to a tank?" Many gas engineers who have had no personal experience of spiral-guided holders, or have not read up the latest information on them, would stumble over this question, and be quite unable to give a ready, clear answer to it. We doubt whether many of the candidates knew precisely what is meant by "radial movement on the "guide-rollers;" and we should be surprised to learn that any substantial proportion of them attempted to reply to the question. Let it not be supposed this matter is being dealt with in any captious spirit. On the contrary, the point is being made to show the value of keeping as far as possible in line with the publication of current technical news. Take another example. In the Honours Grade in "Gas Engineering," the first question asked the candidates to name the chief points of difference in, and the special advantages claimed for, (1) the Woodall-Duckham vertical retort system, (2) the Dessau vertical retort system, (3) the Munich chamber system, and (4) Love's 45° inclined retorts. Few (if any) of the students can have had the opportunity of inspecting these various systems; there have been no practical experience of two of them in this country, and experience, as yet, restricted to few works with the other two. For the candidates to name the chief points of difference between the systems, they must have given, as they ought to have given, very close attention to the published information on them. To both questions here selected for illustration there were alternatives; but, notwithstanding, we hope the moral has been clearly pointed.

Now that the examinations are divided into two sections —gas engineering, and distribution and use—they are a far more critical test of the knowledge of the candidates, as the examiners have greater scope. The combined certificates, too, are of much greater value than the single one of old. The questions in the Ordinary and Honours grades of "Gas "Supply" likewise cover a large range of subject-matter; but though this is only the second year of these examinations, we see that Mr. Brearley has introduced the idea, which commends itself, of putting certain questions in the form of diagrams, with instructions as to the points to which the candidate is requested to devote attention. This departure is one which is undoubtedly in the right direction for getting at the real technical accomplishments of the candidate. There is another point we are glad to see. It is not considered that the education of a student of gas distribution and utilization is complete without a knowledge of the electrical competitor. The examiner draws the candidate upon practical points that the gas manager or the distribution superintendent will more and more have to deal with in the commercial struggle between the two illuminants. That is as it should be.

## Quickened Combustion.

The lecture which Professor W. A. Bone delivered before the meeting of the North of England Gas Managers' Association on the 1st inst. was reproduced, and was also the subject of comment, in last week's "Journal." One or two of the points raised in it may, however, with advantage be referred to again. For instance, we may gain enlightenment on the principles of action of gas fires or stoves by contrasting the ideas of the late Mr. Frederick Siemens on the proper conditions for heating by flame with recent knowledge as to the effect of surfaces in quickening combustion. Siemens held that for the attainment of the maximum degree of efficiency in heating, radiation from the free-burning flame must be relied upon. He was able to achieve a moderate measure of success in the construction of gas-stoves, in which the flame was not brought in contact with any surface by applying to them regenerative principles. By means of a supply of pre-heated air to the free-burning flames, he succeeded in increasing their temperature very greatly, and consequently the proportion of radiated to total heat emitted by them. To this day, gas-stoves constructed on these lines are very common in Germany, and in many other Continental countries, where the English type of gas-fire, with its fire-clay, asbestos, or iron "fuel" raised to incandescence by the play thereon of bunsen flames, is not, we believe, appreciated at its proper worth. We fear the Continental makers of gas heating-stoves have been afraid to rely on the teachings of practice rather than the dictates of the theory of the moment. They have not, however, had to grapple with the prejudice of the English householder in favour of a cheerful "open" fire. We believe there need be little or no loss of efficiency by the adoption of the incandescent open type of fire in place of the free-flame stoves of the Siemens pattern.

It is now apparent that there is theoretical ground for the support of this belief. It has been proved that surfaces may have a most powerful influence in quickening combustion—or we should prefer to say, generally, combination—in gases. Much depends on the nature of the surface. Thus with hydrogen and oxygen, combination commences at about 430° C. with porous porcelain and magnesia, and at 200° C. with oxide of iron. No combination takes place till much higher temperatures in the absence of contact with the surface of these or other heated materials; and the conclusion is that the presence of such surfaces facilitates or quickens combustion. The choice of surfaces is, however, very important; and it may be that it is the superiority of iron or oxide of iron to fire-clay in this respect which accounts for the very high radiating power of iron-fret gas-fires as

compared with fire-clay ball fires. The late Mr. Thomas Fletcher was a firm believer in the iron-fret fire; and we are not aware that the results of his investigations as to the relative proportion of radiated to total heat with this and fire-clay ball fires have ever been seriously disputed. However this may be, it is evident that gas-fires may be improved by selecting carefully the incandescing material or "fuel" with a view to securing the greatest quickening of the combustion. If, further, the regenerative principle is applied to some extent to gas-fires using such materials, there is no question that the type will universally supersede the old free-flame Siemens pattern stove, which still is predominant is many Continental countries. There are often evolved and upheld in academical institutions theories which only tally with a part of the observed facts of practical experience; but at the present time there is as strong a theoretical backing for the "incandescent" type of gas-fire as for the free-flame gas-stove. A few years ago, academic theory was all in favour of the latter.

## Companies and the Super-Tax.

In the few comments on the Budget proposals that appeared in our editorial columns last week, allusion was made to the apprehension that existed as to the intention of the Chancellor of the Exchequer in the matter of the super-tax of 6d. on incomes above £5000. There was some fear that this super-tax might be applied to joint-stock companies. Mr. Lloyd George, however, has made it abundantly clear during the past week that this is not so, but the extra tax will only apply to individuals having incomes above £5000. The additional 2d. is bad enough for shareholders to have to bear. The Chairman of the Imperial Continental Gas Association estimates that the 2d. represents £5150 more to be handed over by them to the Chancellor of the Exchequer.

## Gas Companies as Electricity Distributors.

Several gas undertakings supply gas for driving engines for the generation of electricity for lighting and power purposes; and where the gas is supplied at a reasonable rate, users testify that the costs work out lower than the same supply can be purchased for from the local distributors. There are gas companies now who believe that, in certain districts, they can do better than independent electricity undertakings in the matter of general electricity distribution. No doubt there will be electricians who will consider the mere thought a gross piece of impertinence; but electricians are not unanimous on the point. The gas undertaking is in existence; and it can offer all sorts of conveniences which spell economy in working. On the other hand, there are risks attached to the business; and whether it is wise to enter into it, or to stick to the sole development of the gas business without running an alternative commodity, is a matter for decision in each case. No general expression of opinion will apply to all cases. But where there is territory at present unoccupied by electricity, gas companies are considering the question of offering the alternative supply; and in certain cases parliamentary powers have been obtained, and in others are being sought. The subject is further treated upon in our "Electricity Supply Memoranda."

## Miners and the Eight-Hours Act.

The Eight-Hours Act and its effect on the industry has again been taking up a large share of attention in mining circles during the past week. The Miners' Federation of Great Britain held a special conference in London, which extended over three days; and decisions were come to which have not so far had the effect of "clearing the air," for, by the latest accounts, the attitude of the men remains just as uncertain as ever. The Federation have declared against the acceptance of any reduction in wages as a consequence of the operation of the Act, and also against working an extra hour per day under the sixty-days clause; but within these limitations, the South Wales Federation are left to negotiate with the owners. Should any district be attacked on the wages question as a result of the shortening of hours, then the Federation are pledged to give support to this district in resisting the attempted reduction. In addition to this, it was decided to support the Scottish miners in maintaining a minimum of 6s. a day. Thus it is seen that the Federation have made up their minds to the extent that, if they can avoid it, there is not to be any sacrifice by the miners in the matter of wages consequent on the passing of the Act. While therefore the South Wales miners are left free to negotiate with the owners within the limitations laid down by the Federation of Great Britain, these limitations are such that there appears to be little, if anything, left to them with which to negotiate. They are, of course, still left free to take; but what can they give in exchange? It will be remembered that there has been much discussion in South Wales over a contention of the owners that the coming into force of the Act would automatically terminate the existing wages agreement, which would otherwise run on into next year; and that the last suggestion of the owners was that, in view of the conflicting opinions of Counsel consulted by either side, the final settlement of this point should be referred to a High Court Judge. The men's representatives at the time promised to bring this proposal before the Federation of Great Britain. The decision that any reduction in wages will be resisted to the utmost may be taken as their answer; for the owners would have no object in terminating the agreement unless it was felt that existing wages could not be fairly maintained under the new conditions. Hence matters in South Wales look, if anything, a little less promising even than they did before; and, in addition to this, it is thought in some quarters that the determination of the Federation of Great Britain to support the Scottish miners in maintaining a minimum of 6s. per day renders imminent the danger of a conflict in that coalfield. The situation from the owners' standpoint is summed up by a remark made in the course of an interview in South Wales with a director of a large company, who is reported to have said: "If the men think they are going to be paid the same wages for eight hours of work as they now receive for nine, they are making a great mistake."

## Revocation of Patents Procedure.

Applications for revocation of patents have been growing since the new Patents Act came into force. The provision has been found useful, and has assisted in preventing violation of the terms of the Act. But like most things that are in the nature of innovations, defects and advantages have only developed themselves by experience. The Comptroller-General has found it necessary to make some new rules in respect of the procedure in the matter of revocation applications; and they are important, and should be noted by those who contemplate such action. With the application for revocation, evidence is to be left at the Patent Office, by way of statutory declaration, stating the particulars on which the applicant relies in support of the allegations contained in the application; and the copy of the application delivered to the patentee or his agent is to be accompanied by copies of the evidence. Within fourteen days, unless further time is specially granted, the patentee is to leave at the office evidence, by way of statutory declaration, stating whether or not the allegations contained in the application are correct; and, if incorrect, giving the particulars upon which he intends to rely in answer. Should the applicant then decide to proceed, he may deliver further statutory declarations in reply. Following are provisions dealing with an intimation by the Comptroller as to whether there shall be a preliminary hearing, or whether he intends to deal with the whole case at one hearing. There are other provisions, including one which arranges that, in the event of an application being uncontested by the patentee, the Comptroller, in deciding whether costs should be awarded to the applicant, will consider whether proceedings under the section might have been avoided if reasonable notice had been given by the applicant to the patentee before the application was filed. The Comptroller desires to suppress applications having no prospect of success, or which are merely made to extract information concerning the patent.

## Accident Insurance for Investors.

At first blush, there seems to be a useful idea hidden behind the four words of this heading—useful in these days of a certain character of gas and water company promotion. The Water and Gas Securities, Limited, whose operations are directed from Victoria Street, S.W., have sent broadcast a booklet containing information as to the investment of money by small capitalists. In the booklet are also particulars of a free £500 accident insurance policy, which will be granted to all "investors doing business through this Company." It is a novel idea. But in the wildest flights of our imagination, it has never occurred to us that gas

and water securities would come to this—that business in them would be done in conjunction with a free insurance policy after the manner of cheap diaries and weekly literature of a more or less popular class. It is no fault of gas and water securities that business in them should be dragged down to such a low level. The discredit is on the shoulders of Water and Gas Securities, Limited. It is evident that the Company require the support of some means of making their operations attractive; otherwise they would not angle with any other bait than the "sound investments" themselves. The Company candidly confirm the supposition; for the policy is only to be "granted to investors doing business through the Company." Now if the Water and Gas Securities Company would offer a free insurance policy to be applied to speculative gas and water promotions (which do not as a rule work out quite in accordance with the promises of the issued prospectuses), there would be some sense in the new plan, and the policy would be valuable—at any rate, it would have been during the past few years. But the policy now on offer refers to accidents to the person, and covers infectious diseases. However, it is not the first time that the Company known as the Water and Gas Securities, Limited, have come under our notice. We have letters in our possession which show that they have been identified in pushing appeals for capital in concerns that have not (however highly the Managers of Water and Gas Securities, Limited, may have regarded them) met with our approval, and upon which some reflection has been made in these columns.

## THE LIVESEY MEMORIAL FUND.

We have received from Mr. Walter T. Dunn the following list of further contributions to the fund:—

| 1909. | | £ | s. | d. |
|---|---|---|---|---|
| May 3 | Previously acknowledged | 9165 | 9 | 7 |
| ,, 6 | W. H. Bennett, Dartford | 0 | 10 | 6 |
| | J. Chamberlain, London | 2 | 2 | 0 |
| | William R. Davey, Newbury | 1 | 1 | 0 |
| | G. S. Frith, Frodsham | 1 | 1 | 0 |
| | John Furniss, Slaithwaite | 1 | 1 | 0 |
| | Arthur Graham, Mansfield | 1 | 1 | 0 |
| | Alfred T. Harris, Market Harborough | 1 | 1 | 0 |
| | Phillip G. Moon, Bournemouth | 1 | 1 | 0 |
| | North of England Gas Managers' Association | 26 | 5 | 0 |
| | Frank Osmond, Dorchester | 0 | 10 | 6 |
| | Yorkshire Junior Gas Association | 7 | 7 | 0 |
| ,, 7 | E. G. Dickinson, Lower Sydenham | 1 | 1 | 0 |
| | Robert Watson, Doncaster | 1 | 1 | 0 |
| ,, 8 | London and Southern District Junior Gas Association | 4 | 4 | 0 |
| ,, 10 | Bernard P. Bezant, West Norwood | 1 | 1 | 0 |
| | G. B. Irons, Gosport | | 10 | 6 |
| | W. R. Irons, Saxmundham | | 10 | 6 |
| | Total | £9216 | 18 | 7 |

**Use of Tar for Roads.**—The Hertfordshire County Council have decided to spend during the summer £2300 to tar-spray the roads under their control. Last year they treated 21¼ miles in this manner, at a cost of about £40 per mile. This portion is to be tarred again; and, in addition, about 40 more miles of road are to be tar-sprayed. This is in consequence of the Highways Committee having come to the conclusion that tar-spraying by machines is the most efficacious method of preserving the roads from the effects of motor-car and traction-engine traffic. The authorities of the following places are also going to spend approximately the sums named on similar work: Bucks, £3000; Kent, £5000; Surrey, £3500; East Sussex, £4500; Middlesex, £4500; Essex, £3000; Bristol, £3000; and Wandsworth, £2500. The amount to be spent by the Kent and Essex County Councils is the same as last year; but in the case of the other authorities it has been very largely increased.

**French Directory of the Gas and Lighting Industries.**—We have received from the office of the "Journal de l'Eclairage au Gaz et à l'Electricité," 7, Rue Geoffroy-Marie, Paris, the edition for the present year of the "Répertoire des Industries Gaz et Electricité," the first publication of which appeared in 1895. The contents of the volume, which occupy 725 pages, and have been carefully revised and brought up to date, include a complete list of gas-works, with particulars of the localities served from them, as well as the names of the managers and the local plumbers and gas-fitters. The details furnished in the portion of the book devoted to electricity are calculated to meet all requirements. In each section there is a special chapter giving the names of the larger companies, their capital, offices, directors, &c. The "Répertoire" has been produced under the editorship of M. Maurice Germain, and it will maintain the success achieved by its predecessors. The price is 4 frs., post free to places out of France.

## GAS STOCK AND SHARE MARKET.

(For Stock and Share List, see p. 405.)

Business on the Stock Exchange was again last week quite unable to rise to a point of even moderate activity, and there was no very strongly marked characteristic. The tendency in the earlier part of the week was fairly good. But it was not maintained throughout, and some leading lines closed weaker. Special circumstances in others operated the other way; and altogether there was considerable irregularity. On the opening day the tone was moderately good. The Foreign Market was supported, gilt-edged stocks were bought, and Consols rose ⅛; but the Railway Market was weak. The course of things on Tuesday was on similar lines; Consols advancing $\frac{3}{16}$, and Rails remaining dull. Wednesday opened without any change; but business was so quiet that closing prices gave way for lack of support. The indisposition to activity continued on Thursday and shook prices again. Consols lost ⅛, and other Home Government securities gave way. Friday was cheered by strength developed in several lines—notably South African and Copper securities. Home railways recovered a little; but the gilt-edged division were only poorly, and Consols fell again. Saturday was very quiet, and movements were slight and irregular. Consols managed to lose another $\frac{3}{16}$. In the Money Market, there was just the same state of plethora and ease. Discount rates held on for a time, but gave way at last. In the Gas Market, business was quite up to an average level; some undertakings developing unusual activity. Despite one or two reductions here and there, the general tendency was good, and several advances in value were effected. In a great number of Suburban and Provincial issues, the quotations were drawn in closer by advancing the buying prices a point. In Gaslight and Coke ordinary there was no change, though transactions failed to touch 104 and ranged only from 103 to 103¾. In the secured issues, the preference made from 105½ to 106⅜, and the debenture from 85⅝ to 86. South Metropolitan was much more active, and changed hands at from 123 to 124½. The debenture made 85 and 85¾. All Commercial issues advanced; the 4 per cent. marking 108½ and 109½, the 3½ per cent. 102½ and 103, and the debenture 82¼ and 83. In the Suburban and Provincial group, Alliance and Dublin old fetched $17\frac{7}{8}$ and $17\frac{15}{16}$, British 42½, Hastings 3½ per cent. 94½, South Suburban 120½ and 121¼, ditto preference 123 and 123¾, ditto debenture 125 free, Tottenham "B" from 109¾ to 111, and West Ham 120. In the Continental companies, Imperial was a point stronger, at from 186 to 187, ditto debenture made 96, Union from 99¼ special to 100¾, ditto preference 140½, European fully-paid 24, ditto part-paid 17⅞ and 18, and Tuscan 9 free. Among the undertakings of the remoter world, Bombay made $5\frac{13}{16}$ and $5\frac{7}{8}$, Buenos Ayres $13\frac{13}{16}$ and $13\frac{7}{8}$, ditto debenture 96, Cape Town preference $5\frac{5}{16}$, Monte Video 12½, Primitiva from $7\frac{1}{16}$ to $7\frac{7}{32}$, ditto preference from $5\frac{3}{16}$ to $5\frac{5}{16}$, ditto debenture 96 and 96¾, River Plate from $14\frac{5}{16}$ to $14\frac{5}{8}$, and San Paulo preference $11\frac{13}{16}$.

## ELECTRICITY SUPPLY MEMORANDA.

**Gas Companies as Electricity Suppliers—New Schemes—Advantages and Disadvantages—No General Principles of Policy can be Applied—A Few Questions for the Electricity Sales Manager of West Ham.**

There is a fresh development in recent years in the parliamentary history of gas undertakings. Quite a number have obtained, by Acts passed in recent sessions, the right to apply for Electric Lighting Orders; but of those who have so applied, few have yet put the powers into actual operation. There are a small number of concerns, too, that have obtained electric lighting powers direct from Parliament. Of those who have done so in recent times, the Ascot Gas Company is the only one, so far as we are aware, that has put down electricity plant, and is actually engaged in the electricity business. The result of operations by the Ascot Company in the first half year to June last was a loss of £97, and in the half year to December, a profit of £129. This indicates that, other than the capital charges, nothing has been lost on the electricity department. There is, of course, the question as to the amount of gas business that has been forfeited owing to the opportunity the householders have had to change over to electricity. On the other hand, had an independent company been formed for the supply of electricity, there is not the slightest doubt that those people who desired to use electricity for illumination would for that purpose have left the Gas Company. In business, one cannot govern personal fancies, when the practical questions of expense, reliability, and so forth are treated as matters of small moment. The Ascot Company secured a small amount of profit last year on electricity supply; and it is likely they will go on for a time increasing that profit. But, in such a district, it cannot be long before saturation level is reached.

The most extensive schemes that have yet been brought forward for the amalgamation of electricity with gas supply under company administration are those of the Aldershot and Yorktown Companies, both of whom, as was seen by "Notes from Westminster" and "Parliamentary Intelligence" last week, have Bills in Parliament this session incorporating electricity powers; and these have a fair prospect of going through. The electricity

sections of the Bills deal with areas that have not yet attracted independent electricity concerns. Of course, all such electricity undertakings that are brought into being in conjunction with gas undertakings, will be subject to purchase by the local authorities in whose districts the business is carried on, at the end of periods defined in the General Electric Lighting Acts, or at shorter periods agreed upon by the undertakers and the authorities and specified in Private Act or Provisional Order. The Walker and Wallsend Company will always rank as being the first Gas Company in the country to distribute electricity; but some years ago now, they disposed of the undertaking to the local Electricity Power Company, and they were not particularly sorry to get rid of it. We have not to forget that times have changed since then. Metallic filament lamps have altered the position. Gas has not stood still; and it continues to be the more economical and all-round serviceable agent. Despite the cheapness of modern incandescent gas lighting, no doubt more people will be found who will adopt electricity for illumination now that the cost of the current has been reduced in respect of light obtained in comparison with the cost with carbon filament lamps. On the other hand, in considering the question of the amalgamation of gas and electricity supplies, it must not be overlooked that the metallic filament lamps make it far more difficult to work up to a remunerative level an electricity concern in a purely residential area. Of course, there are well-known instances of municipal gas and electricity undertakings being successfully run under one administration, and without the injury of fierce competition. There is Leicester for example; and there in 1907, after meeting sinking fund and interest charges, a profit was made of £4617. Stafford and Longton are other examples; and in both instances the last published accounts show small surpluses. These, however, are manufacturing districts, and not residential ones; but the profits are less in proportion to the capital employed than in the case of the gas undertakings.

The time has gone by when, in most really profitable districts for electricity supply, any thought can be given to the amalgamation of the two concerns—even if it were considered that such an amalgamation would be desirable, and the undesirability is a very common view among gas men. Looking at the matter from the point of view of gas undertakings with areas in which there is no electricity supply, there are advantages and disadvantages to be advanced, *pro* and *con*, for the joint business. The advantages, however, appear to be more favourable to the electricity than to the gas consumers. There are several economies derivable by the electricity supply through being linked up with the gas-works—economies both in generation and distribution. The gas company have, as a rule, land to spare for the generating-station; fuel and water supply are at hand (or at any rate can be obtained cheaper in view of the quantity required by the two concerns); administration and establishment charges will not be greatly raised; gas and electricity distribution work could often be carried on simultaneously; and inspection and collection could be performed by one and the same staff. All such points are favourable to the amalgamation of the electricity supply to the gas undertaking, rather than the formation of an independent company for the former. There is, by the way, the further point that many gas undertakings have already small electricity plants for the generation of electricity primarily for propelling and operating their retort-house machinery.

There are, it is seen, economies for the electricity consumer derivable from gas and electricity supplies being carried on by one company; and with the benefits of those economies the electricity consumer ought to be well satisfied. The disadvantage of amalgamation is that the gas consumer stands in danger of having to bear any loss there may be on the electricity supply. The accounts for the two concerns, however, should be kept strictly separate. There is admittedly a difficulty in this; but it should not be an insuperable task to fairly allocate the proportion of expenses attributable to the electricity undertaking. In defence of the gas consumers, too, it ought to be made an indispensable condition of such an amalgamation of business that, after a definitely prescribed period at the start, the charges for electricity should be so ordered that the electricity concern in no wise imposes any burden on the gas undertaking. These considerations suggest that it is quite possible there are areas in which an electricity concern could, through the economies offered by amalgamation with the gas undertaking, be made a paying one, where one could not be successfully run independently, through having nothing to depend upon but the revenue from electricity for lighting. There are many electricity undertakings running separately to-day that are doing badly, but which, joined up to a gas undertaking on a reasonable capital, might be made remunerative. Perhaps gas companies looking about for new fields to conquer might pick up electricity undertakings cheap that have despairing shareholders hanging to them. However, the question of entry into this business is one for all gas companies to decide for themselves from their own knowledge of the requirements of their area, or any electrically unattached part of their area, of gas supply. It is a matter upon which no general principle of policy can be laid down. The risks must be varied from the standpoint of the investment of capital; and therefore individual circumstances must decide. It will be seen from the report of the meeting of the Imperial Continental Gas Association in another part of the "JOURNAL" to-day that they are extending into the business of suburban electricity supply in a no mean fashion.

The electricians are sorely vexed that they cannot prove by a straightforward trial that lighting by electricity used with the new metallic filament lamps is as cheap as lighting by gas by the aid of modern incandescent burners. In the attempt to make amends in the public eye for this incapability on their part, they have commenced to quote, in the public press, comparisons of consumers' accounts for corresponding periods—gas being used in the earlier period, and metallic filament lamps in the later. But they conveniently forget to state whether the whole of the gas has been used for lighting, and whether any part has been used for cooking and heating. In most cases they also forget to inquire whether the whole of the gas consumed for lighting was by incandescent gas-burners, or, in whole or in part, by flat-flame burners; they also refrain from saying whether there was a more lavish use of the gas in the number of hours or extent of the lighting. Among those who have published figures is our old friend Mr. H. H. Holmes, the Sales Manager of the West Ham Corporation Electricity Department, whom we have had the pleasure of meeting in controversy before, and whom we are equally glad to meet again. The figures that he has published appeared in the "Daily Mail;" and they are unaccompanied by certain of the particulars enumerated above which are necessary for proper judgment to be made of the value of his comparisons. The figures were republished in a letter in our "Correspondence" columns last week from Mr. H. N. Clark, the Assistant Engineer to the West Ham Gas Company. Our correspondent pointed out that Mr. Holmes had offered to give any "*bonâ fide* inquirers the names and addresses of the consumers" whose accounts were quoted. Mr. Clark applied for the names and addresses; but, by some twist of the imagination, Mr. Holmes does not consider him to be a *bonâ fide* applicant, as he thinks he requires the information for business purposes. We suggest to Mr. Holmes that his refusal is a confession of weakness. How can Mr. Clark or anyone else in the West Ham Gas Company hope to win back from electricity consumers whose accounts are only one-third or one-quarter what they were when using gas? Well now, if Mr. Clark is not a *bonâ fide* inquirer, we hope that Mr. Holmes will regard the "JOURNAL" as coming within the designation. We ask Mr. Holmes for those names and addresses, in order that inquiry may be made to test the accuracy of the assertions contained in his letter, or at all events to see whether they are capable of being discounted.

There are a few questions we should like to put to Mr. Holmes about his figures; and we hope he will answer them. He makes two definite statements—that these householders emphatically declare that "the light [electric] is better than that they were obtaining from gas;" and that "incandescent burners were used in [*sic*] the gas supply." The first question we have to ask Mr. Holmes is, Does he himself believe the consumers are obtaining from electricity a light better than they were obtaining from gas? We take, as an example only, the last comparative figures he quotes for the purpose of asking another question bearing upon this point of the "better" illuminating power from the lower expenditure for electricity. The money spent for gas by the consumer was in a given period £4 17s., and for electricity in the corresponding period £1 4s. The price of gas is 2s. 8d. per 1000 cubic feet, and that of electricity 3d. per unit. Now at 3d. per unit, £1 4s. will purchase 96 units. Mr. Holmes, we think, will not dispute that a unit with the metallic filament lamps is equivalent to 800 candle-hours; therefore 96 units will be equivalent to 76,800 candle-hours. With gas at 2s. 8d., £4 17s. will purchase 36,372 cubic feet of gas. Now if from these 36,372 cubic feet, the consumer merely obtained an illuminating power equivalent to that from the electric metallic filament lamps, he only realized 2·16 candles per cubic foot of gas consumed, by using gas in incandescent burners. That is to say, 76,800 candle-hours ÷ 36,372 cubic feet = 2·16 candle-hours. Our second question to Mr. Holmes therefore is, Does he really believe that this consumer only obtained 2·16 candles per cubic foot of gas consumed in incandescent burners? Further comment will depend on his answer. The third question is, whether, in the whole six cases he quoted, incandescent gas-burners were exclusively used? Fourth, whether the hours of lighting and use approximately coincided? Fifth, whether any of the gas was used for cooking and heating? Sixth, is any gas used now *plus* the electricity? We admit that much is being asked of Mr. Holmes; but, if that gentleman is a lover of fair play, he will agree not too much.

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*Apropos* of electrical charges, we read in a contemporary that on April 19, a consumer was summoned by the Grantham Urban Electric Supply Company for £3 5s. 1d., a quarter's lighting, rent of fittings, &c. Defendant said the amount of the claim was out of all reason, being over 5s. a week for light. He added that he had complained that the meter was wrong, but the Company did not seem to attend to it. The Bench made an order for payment in full. We will let this pass without comment.

At a meeting of the Junior Institution of Engineers, to be held at the Royal United Service Institution, Whitehall, to-morrow evening, Mr. T. S. F. Gibson, Assoc.M.Inst.C.E., of the South Metropolitan Gas Company, will read a paper on "The Construction of Coin-Freed Mechanisms as applied to Gas-Meters." The author will sketch the origin and development of the system, and show the effect of the adoption of slot-meters in his Company's district. He will give illustrations of the different mechanisms; and models will be exhibited.

## PERSONAL.

Mr. J. E. WILSON, the Chairman of the Gas Committee of the West Bromwich Corporation, was last Wednesday elected an Alderman on the Town Council.

As mentioned in the Scotch Notes this week, Messrs. J. SMITH and S. DICKIE have been appointed Joint Managers of the Dumfries Corporation Gas-Works, in succession to the late Mr. George Malam.

At the recent annual general meeting of the Institution of Civil Engineers, Mr. F. W. CROSS, the Engineer of the Lea Bridge District Gas Company, was transferred from the class of associate members to that of members.

In answer to the advertisement appearing in the "JOURNAL" for the 6th ult., 85 applications were sent in for the position of Engineer and Manager of the Shipley (Yorks.) Gas-Works; and the appointment has been conferred upon Mr. H. BLAKEY, who is at present at Morecambe, to which place he went from York. He is only twenty-eight years of age.

In response to the invitation which appeared in the "JOURNAL" for the 30th of March, between 90 and 100 applications were made for the position of Secretary of the Bishop's Stortford Gas Company. As announced last week, the appointment has been made; the successful candidate having been Mr. SYDNEY E. KNOWLES, who has for eight years been the Accountant of the Salisbury Gas Company.

Mr. W. M'LEAN ROSS, who in 1899 succeeded his father as Manager of the Stonehaven Gas Company, has resigned, having accepted the position of Assistant Gas Engineer to the Bundabergs Gas Company, Queensland. During Mr. Ross's management, the annual make of gas at Stonehaven has increased from 7 to 16½ million cubic feet; and the gas-works have been greatly improved and brought up to date. It is interesting to note that grandfather, father, and son have been in successive management at Stonehaven for the past 61 years.

After holding for twenty-three years the position of Gas Engineer and Manager to the Bolton Corporation, Mr. WILLIAM SMITH is retiring, mainly on account of ill-health; and, as recorded in another part of the "JOURNAL," testimony was borne at the meeting of the Town Council last Wednesday to the efficient manner in which he had discharged his duties, and regret expressed that he had been compelled to place his resignation in the hands of the Gas Committee. Mr. Smith held the position of Manager of the Darlington Gas-Works before going to Bolton. One of his sons is at Carlisle, and another at Darwen.

A very successful function took place at the Crystal Palace Club on Wednesday last in connection with the Crystal Palace Old Students' Society, when the President (Mr. H. C. H. Shenton, Assoc.M.Inst.C.E.) and Mrs. Shenton, supported by the Principal of the Crystal Palace Engineering School (Mr. J. W. Wilson, M.Inst.C.E.) and Mrs. Wilson, received a large contingent of the members with their ladies, and a representative number of present students, who were all invited to attend. The company also included Mr. Charles Hawksley, Past-Pres. Inst. C.E., and Mr. R. Elliott-Cooper, M. Inst.C.E., with other honorary members of the Society. The objects for which the function was arranged were fully realized in the re-union of members returned from appointments in distant parts of the world. The Society now includes a membership of 360, out of a total of 1800 students who have passed through the Crystal Palace Engineering School; and Mr. Percy Griffith, M.Inst.C.E., the Hon. Secretary and Treasurer (No. 54, Parliament Street, Westminster), will be glad to hear from any old student who is not now a member, with a view of securing his support.

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**Yorkshire Junior Gas Association.**—A meeting of the Association will be held next Saturday at Bradford, when a paper on "Iron and Its Corrosion" will be submitted by Mr. W. Cranfield. A paper on "Gas Pressure" will also be read. An excursion in June is being arranged for, which will bring this session's programme to a close.

**Recent Wills.**—The late Mr. Howard Charles Ward, the Deputy-Governor of the Gaslight and Coke Company, whose death was recorded in the "JOURNAL" for the 23rd of March, left estate of the gross value of £162,052, with net personalty amounting to £146,723. Almost equally valuable was the estate of the late Mr. C. Tacon, for many years Chairman of the Eye Gas Company; amounting to £122,497 gross and £107,922 net.

**Tar Macadam for Roads.**—We have received from Messrs. Charles Griffin and Co., Limited, a volume entitled "Dustless Roads: Tar Macadam," by Mr. J. Walker Smith, the City Engineer of Edinburgh, and formerly Engineer of Barrow-in-Furness. It is a practical treatise for engineers, surveyors, and others, and embodies the results of observations and experiments made by the author with tar macadam, which he considers can be advantageously and economically employed for the abatement of the dust nuisance on roads brought about by the changes which traffic has undergone within recent years. He has divided his matter, which occupies 216 pages, into fifteen chapters, to which are appended some valuable tabulated replies to queries submitted to engineers all over the country, on the subject of tar macadam and the tarring of macadamized surfaces.

## NOTES FROM WESTMINSTER.

### Profits and Rates and Illuminating Power.

IT has been a busy week in the Committee-rooms for measures dealing with gas; and there have been some surprises in store—particularly over the questions of appropriations from gas profits on the part of local authorities for the relief of the rates, and of the unfair action in burdening the gas undertakings, and therefore the consumers, with the expense of the gas used for public lighting. The decision of a Lords Committee in the case of the Salford Corporation has come as a "bolt from the blue," and has created such an amount of consternation that the Corporation representatives would have gladly withdrawn the gas section, if, under the ruling of the Chairman of the Committee, it had not necessitated the sacrifice of the whole Bill. But it is possible a further attempt will be made to get rid of the prohibition set on the enjoyment of the "sweets" of municipal trading, during the journey of the Bill between the Lords and the Commons, if the authorities will allow this to be done, by dropping the gas section overboard. The Oldham Corporation have also seen fit to come to terms with the outside areas in respect of gas finance, to an extent known in the lobby. But the information will keep until it is brought in definite shape before the Committee to-day. The Alliance and Dublin Gas Company have got their Bill through the Lords—illuminating power, test-burner, sulphur clause, and so forth. The Committee, in fact, got wearied of hearing the washed-out tale of the objectors; and the Chairman stopped the Hon. J. G. Fitzgerald, K.C., in replying for the promoters, every time he touched on one of these topics, with the remark, "You need not address yourself to that," or something akin to those words. The same in the other Committee rooms—the whole time that was devoted to these questions was so much time wasted. Parliament has for the time being settled the matter of illuminating power and the method of testing, and Parliament is not going back upon what it has done, nor is it going to accept the inference capable of being drawn from certain evidence, that the whole of the technicians of the gas industry—save perhaps half-a-dozen men—have run mad, and the half-a-dozen are the only sane ones left. The gas engineers who back the opposition to the settled procedure in these matters would serve their clients much better by telling them candidly that there is nothing to be gained, but that there is money to be lost, in the Committee-rooms by further quixotic hostility. Committee after Committee all of different constitution, session after session, have patiently heard everything that the opponents have had to say; and the effect has been consistently the same—the representations of the latter have been unanimously rejected. And who can wonder when the authentication of experience is on the other side! Is it not now time to acknowledge the uselessness of spending money and time in further antagonistic operations against the inevitable? It is quite clear, too, that other parts of the cases of opponents are injured by the over-doing of this one in respect of illuminating power. There have been further Unopposed Bills before the Lord Chairman and the Unopposed Bills Committee of the Commons—among them the Ammanford Bill. Certain water measures have also moved forward a stage. The Gaslight and Coke Bill is still in a state of suspension. The measure was on the paper twice last week—Tuesday and Thursday, and Mr. Thorne then repeated his objection; but there is now a time fixed—8.15, or as soon after as convenient—next Thursday evening for the Bill to be again brought forward. The fixing of the time suggests that Mr. Thorne will at last be called upon to state the grounds of his objections, and the fate of the Bill will then be decided.

**Limitation of Profits for Rate Relief.** In last week's "Notes," reference was made to the gas section of the Salford Corporation Bill, which was under the consideration of Lord Donoughmore's Committee. The decision of the Committee overshadows all else of interest in the measure and the proceedings. For, as a matter of fact, the powers sought by the Corporation in respect of new works, capital, reduction of illuminating power from 17 to 14 candles, and the adoption of the new test burner, stand complete. The Corporation got all they wanted, and something more. The addenda to what they sought came upon them with so much surprise that they were for the time being absolutely confounded; but, as soon as possible, they set themselves seriously to consider, aided by Mr. Balfour Browne, K.C., how they could escape the forfeiture of existing freedom imposed by the Committee upon them in the interests of equity and fair taxation. The matter was the main topic of conversation among gas men in the Committee rooms from Tuesday afternoon throughout the week; and there was a considerable amount of satisfaction expressed over the indication given that at last Parliament has begun to apply itself to the protection of gas consumers under municipal supply. It is worth repeating here that the Local Legislation Committee of the Commons had been doing something much the same in connection with water supply at Oldham; and that the Oldham Corporation had (we think in consequence), in regard to gas, entered into an agreement that will prove a good thing for the consumers. But to the Salford Bill. The out-districts were in opposition. They did not produce anything remarkable on the subject of illuminating power or the new burner, on which subjects Mr. Isaac Carr was the principal witness. But on the question of the appropriation of gas profits to rates, the position they took up was a strong

one. There was some complaint on the part of the Corporation that the out-districts were trying to evade the bargain made in 1895. But the complaint was a poor one. It is recognized in the Committee rooms that, when new powers are sought, then is the time to come forward and ask for reasonable revision. Their Lordships agreed that the action of the out-districts was quite a proper one.

The out-districts claimed that there should be a limitation of the profits carried to the borough rates by the Corporation. The evidence of Mr. William Cash was a cogent piece of reasoning on this subject; and Mr. E. H. Stevenson supplemented it by some excellent points. During the last twelve years, the amount transferred from gas profits in relief of the rates—after all the other financial obligations of the undertaking had been discharged out of the gas revenue—has been no less than £320,000; the sum appropriated last year being £30,000. Mr. Cash thinks, and with him we are in agreement, that this should have gone to the reduction of the price of gas, both within and outside the borough. Touching upon the question of the provision of profits by the out-districts to relieve the rates of ratepayers within the borough, Mr. Stevenson points out that the spirit of the law as to equality of price in the borough and out-districts is really abused, by the rates of Salford gas consumers being relieved to the equivalent of 6d. per 1000 cubic feet. The decision of the Committee on the subject in brief is, as embodied in a clause now forming part of the Bill, that the Corporation may charge a fair price for gas which will enable them to meet, in addition to the ordinary expenses and maintenance of the undertaking, sinking fund and interest charges on the outstanding capital, put to reserve fund ½ per cent. upon capital until equal to 10 per cent., appropriate in aid of the borough rates 1 per cent. on the outstanding capital (as suggested by Mr. Cash), with a limitation of the carry-forward to a sum sufficient to meet sinking fund and interest, and the appropriation for the district fund, for a year—any balance to be devoted to the reduction of the price of gas. Any deficiency on the undertaking met from the rates is to be a charge on the next profits. Differential rates are to be abolished in the out-districts represented before the Committee; and a statutory obligation is put on the Corporation to charge the lighting fund with the cost of public lighting. These are all matters that can be endorsed as reasonable. In the event of the undertaking becoming a total loss, and the outstanding capital becoming chargeable on the rates of the borough, the out-districts of Eccles, Swinton and Pendlebury, Worsley, and Barton are to bear their proportion of the loss. This is the only peculiar part of the decision. The Corporation made an attempt, after fully grasping the import of the decision, to jettison the gas section of the Bill; but the Committee would not sanction this. The Corporation will, in all probability, now submit, when the Bill reaches the Commons, that the new clause is not in compliance with the Standing Orders. The various matters are dealt with in our editorial columns, so that at this point they may be left in these "Notes."

**A Unanimous Verdict.** The Corporation of Dublin and the County Council of Dublin took up an anomalous position in connection with the Alliance and Dublin Consumers' Gas Company's Bill, which was before Lord Ludlow's Committee the greater part of last week. They complained—reflecting their historical antagonism—of the past administration of the Company, with whom nothing was right; they also complained of the proposals of the Company on coming to Parliament to put themselves into a proper position to better meet the requirements of the city and the surrounding district, and to shape their practices on the lines approved in these times by the greater part of professional gas men as the best for the altered needs of the consumers, and sanctioned year after year by Parliament. The Bill is "an ill-considered one" said Mr. Thomas J. Cotton, the Gas Examiner and Superintendent of the City of Dublin. To which reply may be made that the attitude of the Corporation towards the Bill showed much greater "ill-consideration;" for, if their evidence meant anything at all, it was that they desired to perpetuate the conditions of which they complained. There were, among their representatives, the advocates of that which is obsolete; and the evidence put forward in support of the opposition case was punctuated with extravagance. Lord Ludlow is himself, by profession, an old legal hand; and Counsel and witnesses found the professional acuteness of his Lordship had not been deadened by his abstention from active practice. The qualifications of his Lordship make the more significant the announcement at the close of the critical examination of the proposals of the Bill, and the attempt of the Corporation witnesses to weaken the case of the Gas Company, that it was the Committee's "unanimous" opinion that the Bill should proceed.

The Gas Company had present, among others from Dublin, Alderman W. F. Cotton (the Chairman), Mr. Francis T. Cotton (the Secretary and Manager), and Mr. W. F. Cotton, jun. (the Engineer). The experts who had been taken into consultation by the Company were Messrs. Corbet Woodall, H. E. Jones, Charles Hunt, E. H. Stevenson, W. R. Herring, and Arthur Valon, Professor Vivian B. Lewes, and Mr. John F. Simmance. These, of course, were not all called as witnesses. The Company's Bill covers new capital, conversion of existing capital, new works, land powers, reduction of illuminating power, the new test burner (the absurdity of flat-flame testing still exists in Dublin), and abolition of the sulphur compounds clause. The powers are not by any means being asked for prematurely; and they are needed to put the Company into a sound position in respect of its property, operations, and finances. The need was proved—not only in respect of the Company, but of the consumers, and the extension of business. Of course, the Corporation, as owners of an electricity undertaking that has not shown a financial record of which there is occasion to be proud, and in connection with which there has recently been expert (financial and electrical) recommendation as to an increase in the price of the current, are no doubt most desirous that the Gas Company shall not be placed in a better position to carry on a more strenuous and effective opposition than in the past. Their obstructive tactics on this occasion are probably traceable more to this than to anything else. A very interesting remark fell from one local witness who was called to give the Gas Company a good character; and it was that his firm have changed from electric lighting to gas, not on account of the economy, but on account of the quality of the light. But a member of the Corporation (Mr. John J. Farrell) declared—this being on a par with other fanciful statements made on behalf of the opposition—that electricity is "about half the price of gas," and yet the electrical undertaking is still in its infancy! The "infancy"—this is the seventeenth year of the working of the concern—is a long one; but really Mr. Farrell ought to have been the last to appear in opposition to a competitor doing business with a commodity costing twice that which he specially favours.

However, the Company's capital is said to be high. This was explained to be due to the facts that originally three concerns competed in Dublin, that there is a great mileage of mains in comparison with the business, and other disadvantageous circumstances due to location. Combined with the fact that they have to make a "fancy" article for sale (tested by a flat-flame burner), and that the cost of coal delivered on the works is heavy, the same reasons account for the somewhat high price of gas. The Company were willing to concede 3d. off their standard price in respect of the reduction of the illuminating standard to 14 candles, but, of course, this was not considered sufficient by the opposition. Among the more prominent witnesses for the Corporation were Mr. Thomas J. Cotton (Corporation Gas Examiner and Superintendent), Dr. Frank Teed, Mr. Isaac Carr, and Mr. J. G. Newbigging. The evidence ran mainly on the question of the illuminating power and the test burner. The threadbare assertions as to detriment to the consumers, which assertions are knocked on the head daily by the experiences of hundreds of thousands of consumers, were trotted out. The reduction of illuminating power was declared to adversely affect every type of burner for illuminating purposes, cooking and heating stoves, and gas-engines; and so consumers are compelled to use more gas. There should, in consequence, be startling increases in consumption in the areas where the illuminating quality of the gas has gone down, which there are not. There should be extraordinary increases in the amounts of consumers' accounts; but there are not. Perhaps certain of the opposition witnesses would disagree if we suggested that the reasons for this are to be found in two statements made in the course of the evidence. Dr. Teed, for the Corporation, said: "By the different illuminating power suggested, they would lose 50 per cent. or more on the flat-flame burner, and (only) 15 per cent. of the heating power." Professor Lewes remarked: "The difficulty of developing the full heating power of high candle-power gas is greater than with low candle power gas." This is in agreement with the experiments of other scientific authorities. But why go into the old melange of hostile assertion! Manchester uses the "Metropolitan" No. 2 burner for testing, and supplies a high candle-power gas. There were—of course, unjustifiable—complaints of gas in Manchester not long since. In districts where the illuminating power of gas has been reduced, there has been a falling off of complaints regarding both gas and accounts. These are hard practical facts; and the evidence of such facts is irresistible.

**Oldham Test-Burner and Finance.** The only points raised on the gas part of the Oldham Corporation Bill, when before the section of the Local Legislation Committee presided over by Sir Francis Layland-Barratt, were the proposed adoption of the modern testing clause and the power to be taken to work up residuals. Mr. William Newbigging and Mr. Tim Duxbury supported the Gas Department's proposals; while Mr. Isaac Carr was the principal witness in opposition. Consumers within the borough did not entertain any suspicion that the new test-burner would inflict damage upon them; but in the expressed view of the out-districts, the burner is going to create something wonderfully prejudicial to them. Time will show them they have been too credulous. Who had worked them up to the knowledge as to the supposed terrible evil of the "Metropolitan" No. 2 burner, we have not heard; but the knowledge could hardly have been their own much before they lodged their petition. There were local gentlemen who came along and solemnly averred they were apprehensive of some evil. They seemed sincere enough until one of the number stated that he did not object so much now as he did in the beginning. His frankness was much appreciated, as it showed the little solidity there was in the foundation of his views. The cotton spinners in the out-districts had been induced to think that flat-flame burners were essential to their well-being; but it was shown that there was no difficulty in adapting, and giving them the advantage of, the incandescent burner for their purposes. It was amusing to southerners accustomed to the splendid light afforded by 14-candle gas used in the incandescent burner to hear this evidence against gas that, with

the "Metropolitan" No. 2 burner, will be showing 18 to 20 candle power. However, the Corporation are to have the new burner as their standard; and the power sought as to the manufacturing, converting, and utilization of residual products. The opponents wanted a provision inserted in the residuals clause giving legal remedies in the case of nuisance; but the Committee did not think this essential. There was a larger matter, and that a financial one. The out-districts were, as recent references in the "JOURNAL" have shown, asking for the revision of the financial terms between themselves and the Oldham Corporation in respect of the gas undertaking. It will be seen, in a later paragraph with the side-heading of "Oldham Water Bill," how they succeeded before the Committee in the case of the water undertaking. The Corporation thereupon apparently thought it wise to step down from the pedestal they had mounted in this matter in respect of the gas undertaking, and to come to terms with their opponents. These terms will be introduced to the Committee to-day; so that we will not make special reference to them this week.

**99, Cannon Street.** We should think the persons engaged in the promoting business at this address will be rather chary in going to Parliament in future in quest of statutory powers for gas and water supply, and having the finger pointed at them as the promoters of the Amman Valley Gas Company. Mr. Baker, the Parliamentary Agent for the Ammanford Bill, and Mr. E. H. Stevenson did not spare them before the Unopposed Bills Committee on Thursday. The Ammanford Bill, under which the Amman Valley works are to be taken over by arbitration, was forward for consideration. The Amman Valley concern is to-day a perfect wreck. "The capital was inflated," said Mr. Baker, "and the Company was promoted under somewhat discreditable circumstances;" and Mr. Stevenson's faith in No. 99, Cannon Street, is at such low ebb that he does not think the shareholders will ever get back a penny of their money. That is bad. However, we shall be glad to hear from any shareholders who do, in order that congratulations may be extended to them. Their position is indeed a parlous one; and they are to be sympathized with as much over their losses as their foolishness in so easily falling victims to the specious declarations of the professional promoter. The idea originally was that the Ammanford Gas Company should take over the whole of the capital of the Amman Valley Company that has been *bonâ fide* subscribed and spent; but the authorities of both Houses have positively declined to allow any transaction other than at a price fixed definitely by arbitration. The future of the Ammanford concern is better assured in this way; and the new concern will start with a financially clean slate. The intense local feeling there is against Eaton and his associates is seen by the condition precedent to the withdrawal of the opposition of the local Council, that the promoters of the Ammanford Bill had to agree that they would in future have nothing whatever to do with the Amman Valley promoters. The Ammanford Bill proceeds.

**Home Office Delay.** Through delay in the receipt by the Unopposed Bills Committee of the Home Office report on the Harrogate Gas Bill, the Committee were unable to consider the matters raised therein, and to give a final decision when the measure came before them on Thursday last. Government Departments ought to show a little more promptitude than this, and set a good example. The Company, among other things, asked for authority to supply suction-gas plant where required beyond the termini of their distribution plant; and the Home Office apparently require any authorization given in this regard to come under the same conditions as have been applied to other power-gas supplies in recent sessions. The Home Office seem to be persuaded there will sooner or later have to be some general legislation affecting power-gas supplies; and they want to ensure that whatever power is given now shall not, in addition to conditions ordinarily imposed, be exempt from any regulations designed in future. However, the preamble of the Bill has been declared proved, subject to changes in clauses at the next sitting of the Committee.

**Oldham Water Bill.** The Oldham Corporation, in connection with the water section of their Bill must, before the Local Legislation Committee had finished with it, have come to the conclusion that Parliament is not now particularly friendly to the "grab-all" policy in connection with the conduct of municipal trading undertakings. There was great discussion before the Committee over the objection of the out-districts to the differential prices applying to water supply in the outer areas; and to that discussion Mr. Arthur Andrew, the General Manager of the Gas and Water Undertakings, and Mr. E. W. Drew (Messrs. Wood, Drew, and Co.) contributed largely. Differential prices between the inside and the outside of a borough have for a long time been recognized by Parliament as fair, in view of the greater expense attaching to the supply in the outer districts. On the other hand, in fixing the amount of the excess price, it should not be forgotten that the local authority concerned are allowed to go into these outer districts for business purposes, and there is a value in that which should not be overlooked in fixing prices. Between water and gas, however, there is a difference—that in the case of the former more often than not there are no profits available to be carried to the rates. In Oldham, for instance, only once in 55 years has anything been transferred to the relief of the rates from water profits. The Committee confirmed the differential charges; but they have gone further by ordering that the profits of the water undertaking should in future be divided *pro ratâ* between the Corporation and the various outside authorities. We cannot see the wisdom of this. It is preferable not to have any surplus after proper provision has been made in the interests of the undertaking; and it is preferable not to have any complications between the inside and the outside authorities. If, however, the decision assists in the prevention of profit-making on the water supply, so much the better. Another, and correct, decision of the Committee is that the right to a free supply of water now enjoyed by the Corporation is to cease. We have always been averse to the expenses of public services being met from any municipal trading undertaking, as in our view it is one of the most iniquitous forms of indirect taxation—more so in the case of gas than water. It is true that since 1903 the Oldham Corporation Departments have been paying 4d. per 1000 gallons of water, but that is not the cost of the water into the reservoirs. They will pay the proper sum in future; and the full outlay on the public service concerned will be distributed equitably over the whole body of ratepayers.

## THE PATENT OFFICE IN 1908.

THE Twenty-Sixth Annual Report of the Comptroller-General of Patents, Designs, and Trade Marks, for the year 1908 (which bears the signature of Sir C. N. Dalton, who has since retired from the position), once more refers at some length to the new provisions in the Patents and Designs Act of 1907, which, it is remarked, "have been largely made use of."

The section of the Act which empowers the Comptroller to require typical samples and specimens to be furnished in connection with an application for a chemical invention, was introduced to mitigate an evil complained of by British chemical manufacturers—that many specifications relating to chemical inventions (notably artificial colouring matters) were to a large extent of a speculative character, and indicated products which had not been actually prepared; their production being merely presumed from theoretical considerations. Under this provision, during 1908, samples and specimens were required in no less than 112 cases; and generally speaking no objection was raised to the demand. In some cases, as a result of the requisition, a fuller and more accurate description of the products has been inserted in the specifications, or they have been otherwise amended. Yet another provision which was made use of in 265 cases, relates to those instances in which the examiner may have reported disconformity between the complete and provisional specifications. It is pointed out that it is now possible for the Comptroller to cancel the provisional specification and treat the application as having been made on the date on which the complete specification was left. It sometimes happened that the examiner found, when pursuing his investigations on the complete specification, that the whole of the invention described in the corresponding provisional specification had been anticipated by a prior patentee. In some of these cases the complete specification comprised patentable subject-matter which had been discovered by the applicant when developing his invention, or which, though in his possession at the time, was omitted intentionally or otherwise from the provisional specification. In order that the applicant should not be deprived of the benefit of his improvement by the refusal of the grant of a patent, it is now possible for the Comptroller to grant a post-dated patent in respect of it. Other provisions of which more or less extensive advantage has been taken are the one which allows the filing of a single complete specification and the grant of a single patent in respect of inventions described in two or more cognate provisionals; and those that enable applicants or patentees to apply for patents of addition in respect of improvements on their inventions without renewal fees being payable on them, that enable patents which have lapsed in consequence of the unintentional non-payment of renewal fees to be restored by order of the Comptroller, and that empower the Comptroller to revoke patents under certain conditions.

Turning to the particulars of last year's work of the Patent Office itself, it is seen that there was in 1908, as compared with the preceding twelve months, again a slight falling off in the number of applications for patents, and a larger proportionate decrease in the number of complete specifications filed. The figures for the last four years have been: 1905—applications, 27,577; complete specifications filed, 18,806. 1906—30,030 and 18,243. 1907—28,915 and 18,829. 1908—28,598 and 17,746. The number of applications received from women numbered 572 in all, which was a trifling improvement on the 560 of the preceding year. The number is, however, always a very small proportion of the total applications. Of all the applications for patents, 17,907 were received from persons resident in England and Wales, 1260 from Scotland, and 344 from Ireland. As regards the Colonies, applications from Australia, New Zealand, and Canada show a decided decrease; and there was a general decline in the number received from foreign States—the principal exceptions being France, Holland, Russia, Switzerland, the Argentine Republic, Brazil, Mexico, and South America. The applications from Germany (3059) decreased by 277; and those from the United States (2644) by 442. Of all the foreign countries, France provided the third largest number of applicants—1056. Patents were sealed upon 16,060, or 55·5 per cent., of the applications made in the year 1907; and out of 12,346 patents sealed upon

the applications made in 1895, 471, or 3·8 per cent., were maintained for the full period of fourteen years. The total number of patents which expired in 1908 was 15,943, and the number of new patents sealed was 16,284. Thus the number in force was increased during the year by 341.

As to the official examination under the 1902 and 1907 Acts, it is pointed out that all the complete specifications numbered as of the years 1905, 1906, and 1907 (to Oct. 31) have now been dealt with. During this time, 81,744 applications were filed, in respect of which 51,006 complete specifications were lodged. The investigation showed that of 46,353 cases finally accepted, 3194 (or 6·9 per cent.) were reported by the examiners as having been anticipated wholly, and 26,455 (or 57·1 per cent.) as having been anticipated in part, while in 16,704 cases (or 36 per cent.) no anticipations were reported. In the great majority of instances where anticipations had been reported amendments were made to meet the difficulty. The report says it is noticeable that since the introduction of the present system of examination, many more applications than before have been abandoned voluntarily. Thus in the ten years prior to 1905 the average annual number of applications which became void owing to the fact that the corresponding complete specifications were not accepted within the statutory period was 196; but of the applications filed between Jan. 1, 1905, and Dec. 31, 1907, no less than 4437 (or a yearly average of 1479) became void owing to this reason.

Referring to the subject-matter of the patents, it is seen that "locomotion" still occupies a prominent place, in connection with motor-cars; while activity in the allied branch of "attempts to abate the dust nuisance" is exemplified by many inventions relating to road-tarring machines, compositions for treating the surfaces of roads, &c. Flying-machines continue to exercise an attractive influence on inventors; but electrical subjects, we learn, have in general fallen off in numbers, with the exception of the incandescent lamp and the galvanic battery. Among other things, attention has been devoted, owing to the increasing importance of india-rubber in the commercial world, to processes for the regeneration of waste rubber and the synthetic production of rubber or rubber-like products. In previous issues of the report there has been given a classification of published complete specifications according to the system adopted in the Patent Office publications; but this is absent on the present occasion.

Last year the receipts from patent fees were £262,890, as compared with £265,012 in 1907; from designs fees, £5189, against £5473; and from trade marks fees, £17,358, compared with £18,447. The receipts from the sale of publications were £11,898 —making the total receipts £297,335, as against £300,389 for the preceding year, or a decrease of £3054. On the other hand, the expenditure, at £179,531, exhibits an increase of £3301.

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**Institution of Mining Engineers.**—At the general meeting to be held in London on the 27th and 28th inst., under the presidency of Dr. R. T. Moore, one of the papers will be entitled "Comparison between the Value of Surplus Gas from Regenerator Bye-Product Coke-Ovens and Steam produced by the Waste Heat from Bye-Product Coke-Ovens, with special reference to the Evence-Coppée New Bye-Product Ovens;" the author being Mr. Mansfeldt H. Mills.

**The Bryan-Donkin Gas Exhausting and Compressing Plant.**—We have received from the Bryan Donkin Company, Limited, a copy of the new edition for the present year of their catalogue of gas-exhausting plant. The descriptive matter is preceded by some views of the interior of the works at Chesterfield, which show how extensive and well-equipped they are. A description is given of parts of the improved Beale exhauster, and it is succeeded by some observations on gas-exhausters generally. Exceedingly well executed illustrations follow of various types of exhausting machinery, accompanied by a description of the leading features. Exhausters for small gas-works and others electrically driven are shown. The rest of the catalogue, which is well printed and enclosed in an artistic wrapper, is devoted to regulating, governing, and other plant, including the Company's patent rotary double-stage gas-compressor, driven by a gas-engine, for high-pressure distribution.

**Coke Breeze for Concrete.**—In an article on "Concrete Aggregates" in the current number of "Concrete and Constructional Engineering," Dr. John S. Owens makes the following remarks on coke breeze: "Coke breeze is very light, and therefore makes a light concrete, which is also very fireproof. It is liable to contain dust and other impurities, such as sulphur; and care should be exercised in its use. I have seen concrete made from so-called coke breeze which absolutely refused to set at all, and had to be removed and reinstated. Breeze concrete is specially suited for suspended floors, owing to its lightness. It possesses also the advantage that it can be nailed to. It is not, however, strong, and should only be used when lightness is of great importance. Coke breeze weighs about 35 lbs. per cubic foot; hence the lightness of the concrete. It is very porous, but not so absorbent as its porosity would lead one to expect, as the cavities contained in it are mostly closed, being formed by the bubbles of gas evolved during coking. The walls of these cavities are highly polished and dense, but very thin. It is difficult, therefore, for water to obtain access to them. The material is peculiar in structure, and has certain properties which make it valuable as a concrete aggregate."

## PROFIT AND LOSS IN MUNICIPAL TRADING.

Municipal trading continues to furnish examples of the confusion of thought which exists in many minds as to what is to be regarded as profit on businesses conducted in the public interest. The gentleman who, at the Barnstaple Town Council meeting last week, objected, as recorded elsewhere, to a deficit of £476 on the electricity account being described as loss, is by no means a solitary specimen of his class. There are many men who, in regard to municipal undertakings, seem to be utterly incapable of appreciating not only the principles of sound financial administration which are at the basis of all successful trading, but who cannot distinguish between profit and loss in such cases. What ordinary people call loss is euphemistically described at Barnstaple as an insufficiency in the revenue account to meet the capital charges. It is to be hoped the ratepayers who will have to find the money to make up this insufficiency will appreciate the distinction. Truth to tell, however, there are many municipal undertakings, especially those for the supply of electricity, which would fall into the class of those which have an income too small and an expenditure too great, if all the charges which could be legitimately debited were entered up against them. Most of them, by dipping liberally into the pockets of the ratepayers for public lighting, or by charging an excessive price for the current for working the municipal tramways, manage to make a show of providing the funds to meet the charges for capital. Few make adequate provision for depreciation of plant. It is a common failing with corporations to consider the sinking fund charge sufficient to cover depreciation. The temptation to take this course is very great when there is little or no surplus of revenue, and it is considered necessary to produce a "profit." In such cases it is preaching to deaf ears to say that depreciation is a matter which should be considered quite apart from the sinking fund. If municipal undertakings were to be conducted on the same lines as well-managed businesses in private ownership, there would be no talk of surplus or the allocation of profit to the relief of rates until a sufficient sum had been set aside to provide for current repairs, for the equalization of future repairs and renewals, for the contingency of obsolescence, and for a reserve against bad years. The number of cases in which this is done is exceedingly small, partly, no doubt, because of the constant and growing demand for contributions from these undertakings to relieve the rates, and partly because of the general lack of a sense of responsibility to the future. The law provides that certain funds shall be set aside for the redemption of capital; and when he has fulfilled this legal obligation, the average councillor is content to let posterity look after itself.

## GAS AT THE IMPERIAL INTERNATIONAL EXHIBITION.

The time is approaching when the Imperial International Exhibition at Shepherd's Bush will be opened. The precise date of the inauguration ceremony is May 20. There has been considerably less noise made over the preparatory stages of the exhibition this year than last; and there are rumours afloat that there has not been on this occasion any violent rush for space for exhibiting purposes. Some of the great buildings are empty; and in others but little space has been taken up. From current talk, it appears there will be some difficulty in showing a title to the designation "International Exhibition," as representing the arts and industries of the various nations. There is no doubt the White City will henceforth find its proper level as a big place for popular summer recreation, and little else. The site, it is stated, has been enlarged from 140 to 150 acres; and the roadways will be in much better condition than last year. Capital roads have in fact, been constructed with a broken brick foundation and well-gravelled surfaces—the height being raised by about 1 foot. To enable visitors to get about the grounds with—this anyway is the design—the minimum of fatigue and the maximum of comfort, a complete tramway system, 3 ft. 6 in. gauge, has been installed; the length of track laid being about 4 miles. The illuminations, it is announced, will be on a larger scale than last summer; the lights numbering considerably over a million.

There will be no special demonstration of gas or electricity through joint enterprise. But the large section of the grounds beyond the "flip-flap" and within the further border of what was known last year as the Grand Avenue of the Colonies, will again be lighted by the new 1500-candle high-pressure lamps of the James Keith and Blackman Company, Limited. These lamps, it may be remembered, numbered 230; the pressure at which the gas is supplied to them is 54 inches; and they are economical in consumption—25 cubic feet sufficing for a light of 1500 candles. The lamps have been standing in position the whole winter; and though the weather has been very tempestuous and severe, they do not look any the worse for wear—in fact, the majority of the mantles are still hanging in the lamps just as they were left when the lighting ceased on the closing day of last year's exhibition. A little cleaning up, and remantling where necessary, and the lamps will be in readiness for the opening day.

In addition to this outdoor lighting, the firm will also have the lighting of an interior space some 300 feet square—representing

90,000 superficial feet. This is the large space in the Machinery Hall that connects up the two long arms, in one of which the Gas Section was located last year. This portion of the Machinery Hall will be lighted by 56 of the 1500-candle power Keith high-pressure lamps, which will be controlled, in similar manner to the exterior lights, from the compressors. The compressors will be situated in about the same position as they were last year. The plant will be in duplicate; and each compressor will be capable of dealing with 10,000 cubic feet of gas at a pressure of 54 inches, or 2 lbs. per square inch. They will, it is arranged, be direct-coupled to two 8½-horse power gas-engines. The plant will contain other new features. One is a no-load starting device. The importance of this will be appreciated by all who have had any experience with gas-engines direct-coupled to machinery. The compressors and engines being direct-coupled, they will be more compact and present an altogether neater appearance than the plant on view last year. Then there are continuous lubricating devices and oil-separators; any oil that is carried off with the gas being, when passing through the latter, deposited and returned to the compressor. There being no Gas Section on this occasion, the compressing plant will stand alone; but it will be found well worth an inspection.

Up to the present, comparatively little progress has been made with the exhibits that are to occupy the Machinery Hall. As, however, there is to be no united effort in the way of a Gas Section, the chief interest to gas men will, apart from the high-pressure lighting, be the Smoke Abatement Section, in which will be several exhibitors well known for their different specialities for reducing the common atmospheric nuisance of urban life. This smoke abatement exhibit will be situated in the portion of the Machinery Hall lighted by the high-pressure lamps. This part, in fact, is the only one that has been retained for engineering and kindred exhibits this year. In it the James Keith and Blackman Company will have a stand, at which their different types of lamps will be on view. Certain other exhibitors are also arranging for the lighting of their displays by high-pressure gas-lamps of smaller units than the 1500-candle power ones. In this way, gas lighting will secure additional demonstration at the exhibition.

Of course, the great success this year is, next to the lighting of part of the grounds, the securing of the illumination of the Machinery Hall; and the demonstration here of the use of high-pressure gas for large interiors will certainly be of advantage to the industry. The Brentford Gas Company, within whose district of supply the exhibition lies, will, of course, be supplying the gas; and Mr. Alex. A. Johnston, the Company's Engineer and Manager, sees before him a fair prospect of selling about the same quantity for exhibition consumption as last year. Of course, the closing down of the Canadian and Australian Sections will represent fairly heavy losses to counterbalance, as in both instances gas-engines were used last summer for generating electric current. However, there will be certain new users of gas this year; and Messrs. Lyons and Company, Bovril Limited, and others will be making additional demands for gas.

The following are the exhibits that will be employing gas for power purposes:

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| Associated Newspapers, Ltd. . | One | 115-Horse-Power | Engine. | (New) |
| Scenic Railway. . . . . | Two | 100 ,, | ,, | — |
| Scott-Snell Scenic Aeroplanes. | Two | 68 ,, | ,, | (New) |
| Canadian Toboggan . . . . | One | 26 ,, | ,, | — |
| Spiral Railway . . . . . | One | 50 ,, | ,, | — |
| Wiggle-Wobble . . . . . | One | 26 ,, | ,, | (New) |
| Spiders' Web . . . . . | One | 16 ,, | ,, | — |

Messrs. Lyons and Company (the Exhibition caterers) will have in use twenty-four meters, ranging from 30 lights to 100 lights, for cooking, heating, and lighting, and also eighteen large cookers. These include additions upon last year.

The Bahamas House is now being fitted up with Messrs. A. E. Podmore and Co.'s new "Oriental" three-cluster inside inverted gas-lamps. The Chinese Pavilion has also a complete gas installation for interior lighting by Mr. W. Edgar's new inverted lamps. Both these are new installations. The whole of the lavatories, numbering about 60, have complete gas installations for lighting purposes—representing additions upon last year.

The following have adopted gas for lighting, heating, and cooking: Irish Village, "Lemco" and "Oxo" (new), Bovril Castle (increased), Shanley's Chair Offices, Police Sections, Ambulance Sections, Moutal Sweet Company, African Nougat Company, Stringertype Manufacturing Company (new), Seymour and Co., Engineers, Birmingham (new), Messrs. Josephine (Machinery Hall), Messrs. M'Vittie and Price, Messrs. Godfrey Phillips and Co., and Messina Earthquake exhibit (new). Therefore, though there is no special joint exhibit this year, the effects of gas will be seen, and its utility will be in evidence.

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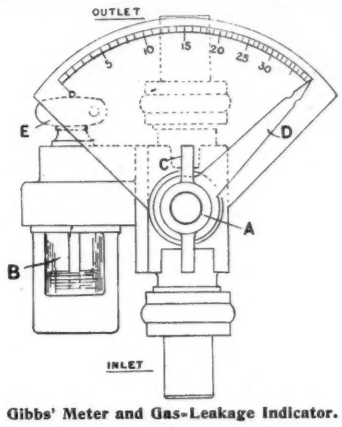
As stated earlier in this article, the Electricity Companies of London are not this year making any special display; but the Simplex Conduits, Limited, have put up a model house, including an electrically-equipped dining-room, drawing-room, bedroom, and kitchen, for the purpose of bringing to public notice their metallic filament lamps, and electric cooking, heating, and ventilating apparatus. The site they have taken is between the Garden Club and the Grand Restaurant. A separate exhibit of the kind is greatly to be preferred to one mixed up with numerous others having nothing in common.

## A RATE-OF-FLOW MEASURER AND LEAKAGE DETECTOR.

"The basis of economy is prompt and accurate measurement." These words appear at the top of a circular with which Mr. O. Nelson, of 32, Cheapside (the sole agent for London), introduced to us the handy instrument illustrated, and which is described as Gibbs' gas-meter and leakage detector. Gas engineers and consumers are decidedly interested in both economy and prompt and accurate measurement; and therefore the new contrivance for effecting both gas measurement and waste detection appeals at once for consideration. Mr. George J. Gibbs, the inventor, has displayed acuity in inventiveness in several directions, and an instance is this particular appliance. In it, he strikes, so far as recollection carries us, quite a new line for the purpose of accomplishing the objects in view. The uses of the appliance have been demonstrated to us in a short interview; and the degree of practical service can easily be ascertained by gas engineers by obtaining a sample. The new appliance is specially recommended for such places as railway stations, yards and sheds, mills, factories, and warehouses; and, furthermore, it can be made for gas-mains of all sizes—in fact, it is claimed that no rate of flow is too small to be measured, and none too large. "A rate of flow," the information is given, "as small as 1 cubic foot per hour through a 12-inch main can be immediately detected and measured. The same accuracy is attainable throughout any range of sizes, whether it be for a 36-inch main or a ½-inch service-pipe."



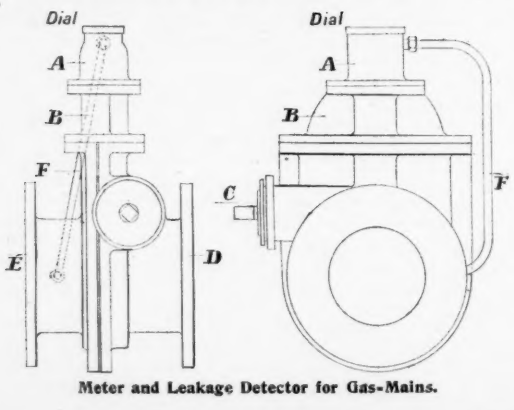

**Gibbs' Meter and Gas-Leakage Indicator.**

The demonstration witnessed with one of the "meters" and gas-detectors—a small one for a ½-inch pipe—showed that the appliance is very sensitive; and an examination was also conclusive that it is not an instrument that will readily get out of order, or depreciate in the matter of accuracy. Looking at the illustration, there is the connection and body of the appliance, with a quadrant and pointer mounted on it, and at the side a small manometer, in which the sealing liquid is merely water, the glass container of which is quickly cleaned, when necessary, by simply unscrewing the outer metal shield. But now for a more detailed description. Consulting the illustration, A is a specially constructed gas-cock, with gas inlet and outlet as shown. To the body of the cock is attached the dial graduated to read cubic feet of gas per hour. The index finger D is attached to the plug of the cock, and moves with it. In normal working, the cock is used exactly as any ordinary cock, and stands full open as shown in the illustration. But when measurement of gas consumption or leakage is to be made, the cock is gradually closed by means of the handle C till bubbles of gas appear in the detector B. The index finger D then indicates on the dial the rate at which gas is passing through the cock. The principle on which the apparatus works is that for a given rate of flow of gas through the cock—say, 10 cubic feet per hour—there is a definite position of the plug and index which causes the detector B to show, by bubbles of gas in the liquid, the small definite difference of pressure on which the dial scale is based. The detector B is fitted to the side of the cock, and is a specially sensitive and simple form of manometer, which only indicates the one particular pressure difference for which the meter is constructed. An arrangement of small ports or passages in the body of the cock and detector enables the difference of pressure between the inlet and the outlet of the cock to act on the detector. The small cock E which serves to put the detector out of action is the exact counterpart of the bye-pass cocks which are sometimes fitted to ordinary stopcocks.

When it is desired to know how much leakage is taking place from the gas-pipes and fittings in a house or other establishment, all burners are turned off, and the cock is gradually closed as described above until the bubbles appear in the detector. The index finger D then shows on the scale how much gas is leaking to waste. It is thus obvious that the urgency of any necessary repairs may be at once determined, and also, by further test, whether such repairs have been complete and efficient, and the use of high-pressure gas which is now coming into vogue makes the employment of some such device the more desirable.

Before referring more explicitly to the method of using the instrument, it may be said that these gas-cock detectors are made in sizes for ½, ¾, 1, 1¼, 1½, and 2 inch pipes; and larger sizes of pipes have to be dealt with separately.

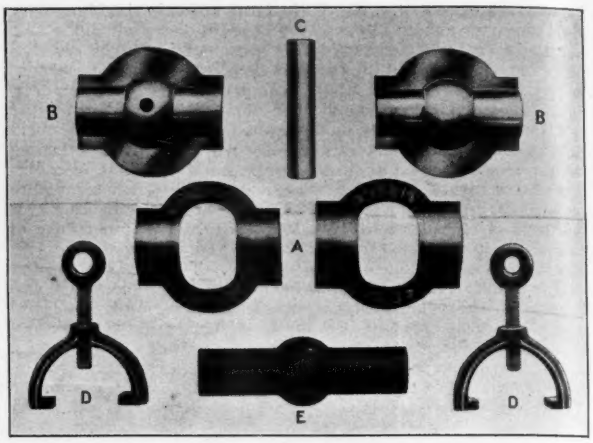
Now as to the method of using the appliance, it is first necessary to observe that sufficient water is in the glass tube B to submerge the end of the small brass tube—just enough to cause the lower end of the thicker tube to appear below the surface of the water when viewed horizontally. Then turn the small cock E so that the end through which the small hole is drilled is towards the main cock. The main cock, being full open, must then be gradually closed until a bubble of gas appears at the lower end of the small brass tube in the water. The index finger D will then show on the dial the rate at which the gas is passing through the pipe. This rate of flow, when no gas is being usefully consumed, represents the amount of leakage that is going on. When it is desired to know the amount of gas consumed by any particular apparatus, two readings should be taken, one with the apparatus in use and one without. When the detector is not in use, the small cock E should be turned so that the small hole is away from the main cock; the water-gauge being then hermetically sealed. In case it is necessary to replenish the water (which is very unlikely) the brass cage surrounding the glass tube B may be unscrewed by the fingers, when the tube B can be withdrawn, and water put in to bring it to the proper working level. The detector should be fitted at the commencement of the gas-pipe through which the gas to be measured is passing; and the intention is that the detector should be left permanently in position like an ordinary stop-cock, so that the information as to gas consumption and leakage may be obtained promptly at regular intervals. The accuracy of the detector, it is understood, is not affected by any change in gas pressure. In addition to consumption and leakage, the detector meets a variety of useful ends. It will obviously give warning if any burners are turned on when they should be off, and report when repairs to any pipe or fitting are necessary, and, when done, by further test if the work is well done. It is worth noting that the leakage of 1 cubic foot of gas per hour represents a loss of no less than 8760 cubic feet per annum. The point is frequently overlooked.




**Meter and Leakage Detector for Gas-Mains.**

A few words as to the application of the meter and leakage detector to large mains. In the illustration we have shown a large and specially constructed sluice type of valve, the wheel for opening and closing which is fixed to C. The hand-wheel may be arranged horizontally or vertically at any desired distance from the body of the valve. The indicating manometer is enclosed within the casing A, which is provided with a plate-glass top; and the dial which indicates the rate of flow of the gas, is also situated beneath the same glass plate. The dial and manometer may be placed at any distance or in any direction from the valve. The lettering of the illustration represents: D the inlet side of the valve; E the outlet; and F is a small pipe to carry pressure to the manometer, which is specially designed to show only the one particular pressure difference for which the dial is graduated. B is merely a cap to the sluice chamber, and may sometimes serve as an extension-piece to carry A. The dial is usually graduated to show cubic feet per hour, and may refer to any given pressure or range of pressures. The appliance in the form here described is designed for mains of any diameter from 2 inches upwards.

Attention has also been drawn by Mr. Nelson to Brierley's patent apparatus for making joints for lead piping. Again we have a simple means of effecting economy; and what is more, an expert is not required to make a trustworthy, clean, and presentable joint—in fact, the old method of making plumbers' joints in lead-piping by wiping and soldering is, by the patent, quite revolutionized. The requirements and method are absolutely simple. All that has to be done is this: A brass or other metal core C is fitted into the ends of the pipes to be jointed. Then a metal mould A, with copper or other metal lining B, is clamped on the pipes by clamps D. Molten lead is poured into the mould; and by means of a blow-lamp, the pipe ends and the surrounding lead are fused together, resulting when cooled in a perfect homogeneous cast E. By this method any sizes of pipes can be jointed; either simple or multiple branch joints being equally well made. Joints made




**Brierley's Apparatus for Making Joints to Lead Piping.**

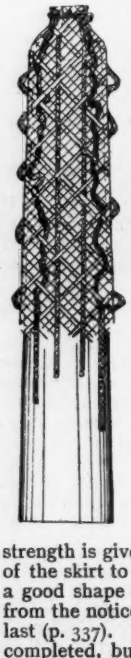
in this manner are said to be much cheaper, more durable, and more perfect than those made in the old manner with solder. As only lead is used, expansion and contraction are equal throughout the pipe. This in itself is an improvement—especially in hot-water pipes where there is a great variation in temperature, as the unequal contraction and expansion of dissimilar metals is one of the chief causes of leakages at joints of water-pipes. But the great thing is the expedition in the making of joints; and time saved is money earned.

## THE ROSS PATENT MANTLE.

### An Asbestos and Ramie Structure.

As far back as Jan. 21, 1908, there appeared in our columns a special article describing the Ross patent mantle, about which there were novel features which had been introduced for the set purpose of strengthening the mantle physically, and producing certain effects conducing to improvement in illuminating power. During the past year, the mantle has been exploited in Germany with a success that has, we are assured, given every gratification to the holders of the patent; and now business in the mantles in the United Kingdom is being developed by the Patent Appliances Company, of 6, Holborn Viaduct, E.C., of which Mr. Charles W. Neumeister is the Manager. The information as to trials made in this country, and the resulting increasing demand, confirm the claim to the mantle being one that possesses individual merit.

Let us recall certain of the features, which give the mantle—both for vertical and inverted burners—a distinctive character among articles of its kind. In the first place, the mantle is neither knitted nor woven, but is braided—the point of advantage claimed for this being that the mantle possesses greater elasticity than one that is knitted or woven. A second point is found in the combination of materials employed in the construction of the mantle—asbestos and ramie. Six-fold asbestos threads form ribs running vertically, and threads of the same material but of less substance supply diagonal bracings (as it were) between the ribs, joining up in manner so as to distinctly show a diamond shape. The spaces between are filled in with braided ramie. In the making, the stocking is not so wide as is the case in the ordinary form of manufacture; and in shaping the head of the mantle no pleats are formed. The ability to narrow the stocking, and make a head free from pleats, is due entirely to the braiding of the threads forming the fabric, and the interlacing with the asbestos ribs—this giving the power to draw the threads tighter at the top, and so giving a closer mesh there. When the stocking is stretched and placed on a conical shaped mould to give it form, and the asbestos threads are pulled taut, the mantle assumes the conical shape without a single ruck in the head. The construction—as here described—supplies the ground for the submission of the patentee that strength is given to the head, and that the liability of the bottom of the skirt to fray is reduced. Moreover, the mantle maintains a good shape throughout its life. The illustration is reproduced from the notice we inserted of the patent specification on Aug. 4 last (p. 337). It does not give any correct idea of the mantle as completed, but is merely to illustrate the vertical asbestos ribs and diagonal cross supports.



Further merits presented to notice by the owners of the patents are that the fabric, through being braided, offers a uniform surface to the impregnating solution, possesses a large field of illumination relative to size, has greater constancy in respect of illuminating

power, and retains its maximum illuminating power for a considerable period. In respect of illuminating power, it may be remembered that, in the previous article, it was stated that our information attributed to a mantle of this type used on an ordinary burner, consuming 150 litres of gas (5¼ cubic feet), an illuminating power of 136 Hefner units, or, in other words, 26 Hefner units per cubic foot of gas. This is such a remarkable result, that there was an inclination to a little feeling on our part that some mistake had been made, or at all events that such a return must have been obtained under some special conditions. But we are assured by Mr. Neumeister that there was nothing special about the tests, that they were made by recognized photometrists, that the pressure was an ordinary one of about 16-10ths, and that subsequent tests have shown that the original claim was justified. Dr. H. Bunte, of Karlsruhe, reports as follows on the mantle: "The consumption of the upright 'C' mantle is about 125 to 129 litres per hour, at a pressure of 35 to 38 mm., and that of the inverted is 79 litres per hour at a pressure of 35 mm. The lighting power increases during the first thirty hours. The mantle has great resisting power against vibration and shocks, as the fabric, and particularly the ribs, are firm and of a good and uniform nature, in consequence of which the light is distributed symmetrically in all directions of the horizontal plane." The photometrical value is one that most gas engineers will be curious to test on their own account; and the opportunity now offers.

There is no question that mantles that are both cheap and nasty are a disadvantage to the gas industry. They are expensive in the long run, and create an amount of labour that is an annoyance to the user. The "Ross" mantle is not put forward as being in the class of cheap mantles, but as one that will save labour by its durability, and will consequently be worth the money asked for it. Mantles for all types of burners and pressures are made on this system; and the finish of all those that have been under inspection may be described as clean and neat.

# ADDITIONAL WATER STORAGE FOR LONDON.

**Opening of the "Beachcroft Reservoir" at Honor Oak.**

Last Wednesday afternoon, in brilliant sunshine, but accompanied by an unpleasantly high wind, London was provided with a substantial addition to its water storage, by the opening—by the Right Hon. the Lord Mayor (Sir George Wyatt Truscott), in the presence of a large gathering of ladies and gentlemen—of a new covered reservoir for filtered water, which has just been completed by the Metropolitan Water Board in the vicinity of the Honor Oak Station of the South-Eastern and Chatham Railway Company. The following particulars of the reservoir are taken from an interesting *souvenir* prepared for the occasion; the illustrations being reproductions of photographs placed at our disposal by officials in the Engineering Department of the Board.

The new reservoir, which is the largest of its kind in the world ever constructed at one time and under one contract, is situated on land 28½ acres in extent, purchased in 1897, within the boundary of the Camberwell Borough Council, near the north side of Peckham Rye. The Act which authorized its construction was obtained by the late Southwark and Vauxhall Water Company in the year 1894, and an extension of these powers was granted by Parliament in the session of 1906.

As the material found on the site was very suitable for brick-making, the first step taken towards the construction of the reservoir was the manufacture, on the site, of the bricks that would be required. This work was commenced in 1898. The Company proceeded to erect a large Hoffman kiln, brick-making machinery, and house, also a steam brick-dryer, by means of which 19 million bricks were manufactured. By the adoption of this course, a large saving in the eventual cost of the reservoir was effected, as not only was the expense of the carriage of the bricks avoided, but that of removal, cartage, and disposal of the surplus material was rendered unnecessary. In November, 1905, after the Metropolitan Water Board had taken over the duties of the Company, tenders were invited for the construction of the reservoir, and eventually the tender of Messrs. Moran and Son, Limited, was accepted for the execution of the work.

The top water level of the reservoir is situated 144 feet above Ordnance datum. Its principal use is to afford low-pressure service to the south-eastern portion of the Board's area—though, by means of mains which exist beneath the River Thames, it will be possible to transfer the supply to the northern side should it at any time be necessary. The reservoir is constructed on the natural clay formation, the bottom being of concrete formed as inverted arches crossing each other at right angles, each apex of the groining being prepared to receive brick columns or piers, of cruciform section. The thickness of the brickwork is 1 ft. 6 in., and the width across the piers 4 ft. 6 in. These piers carry the roof, which is also of brickwork, and consists of a series of parallel segmental arches running the whole length of the reservoir from north to south. The distance from centre to centre of the piers is 21 ft. 6 in. in both directions; consequently the reservoir is divided into cells or bays, 21 ft. 6 in. square. Segmental jack arches, at right angles to the segmental parallel arches mentioned above, run from pier to pier throughout the series.

Two division walls at right angles to each other divide up the reservoir into four sections. These walls are cambered back to back; the space between them being filled in solid with concrete. The outer retaining walls are of concrete, lined on the inside with brickwork; headers being provided on every fourth course to bind into the concrete. The retaining wall varies in thickness at the

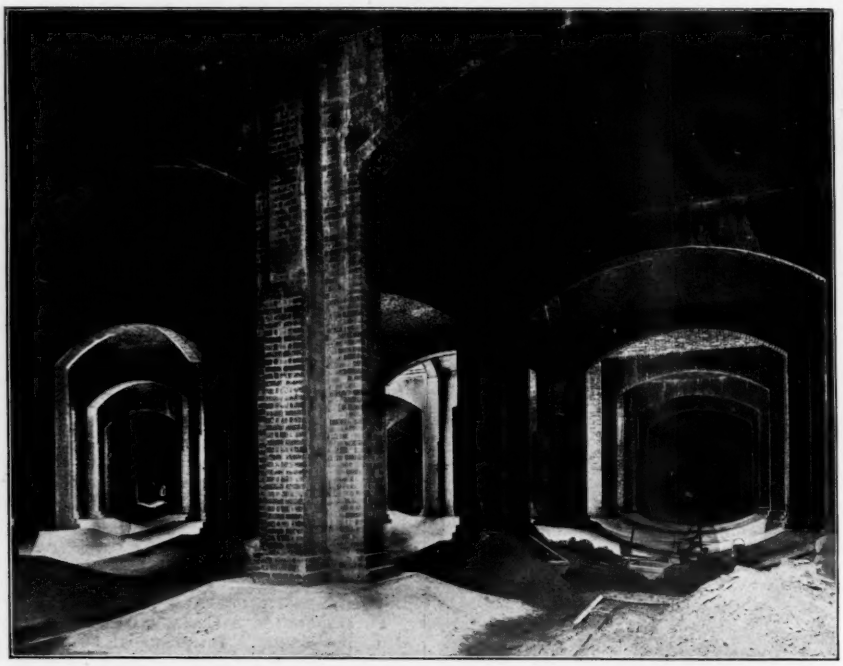
**The "Beachcroft Reservoir" at Honor Oak—General View during Construction.**

base from 6 feet to 16 feet according to its depth, and, in addition, each bay is provided with a buttress reaching in most instances to the first pier. On the north and south sides, and also along a portion of the west side, the buttresses are carried farther; and in places where the pressure is greatest those for the retaining wall are carried back to the fourth bay from its face. The interior faces of the bays against the outer wall on the north side, and considerable portions of the east and west walls, are plain vertical brickwork; but the faces of the bays against the south wall, and several of the bays on the east and west walls, are constructed with vertical segmental arches similar to those in the division walls.

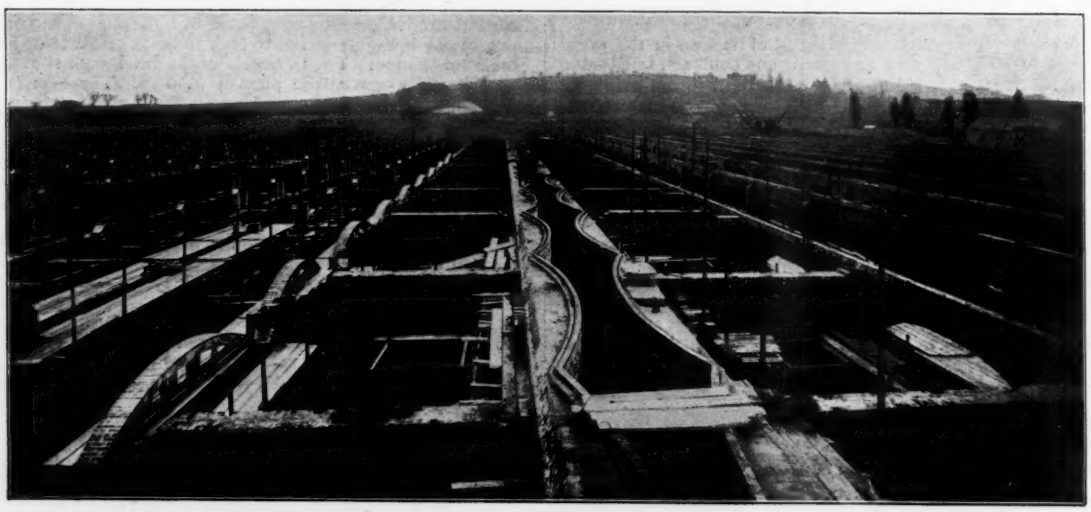
Draining channels running north and south are formed in the inverts on the floor of the reservoir. These are connected together near the intersection of the division walls, and lead into pockets formed in each of the four sections of the reservoir wherein 30-inch emptying-pipes and sluice-valves are fixed. At the point of intersection of the division walls, a circular valve chamber 24 feet in diameter is formed, extending from the top to the bottom of the reservoir. To this chamber the various supply, draw-off, and intercommunicating pipes are carried; 42-inch and 36-inch sluice-valves being fitted to the various pipes for the purpose of controlling the water to and from each reservoir. The valves are manipulated from the interior of a valve-house constructed over the valve-well at the top of the reservoir.

In addition to the brick arched covering of the reservoir, there is spread over the roof a layer of 6 inches of cement concrete, covered with a thin layer of neat cement carefully trowelled over. The remainder of the covering consists of clay and the top soil originally taken from the site, forming a level surface over the whole extent of the reservoir. Air-pipes, 6 inches in diameter, are placed at intervals over the bays, for the purpose of ventilation and to allow of the escape of air during the process of filling, or to admit air while the water is being drawn off.

Round the outside of the retaining outer walls is a puddled clay wall 3 feet thick taken down to the London clay, into which it is made water-tight. The top of the wall is carried on to, and is connected with, a layer of clay extending over the roof of the reservoir. The earthen embankment, which extends along the north side and portions of the east and west sides where the top

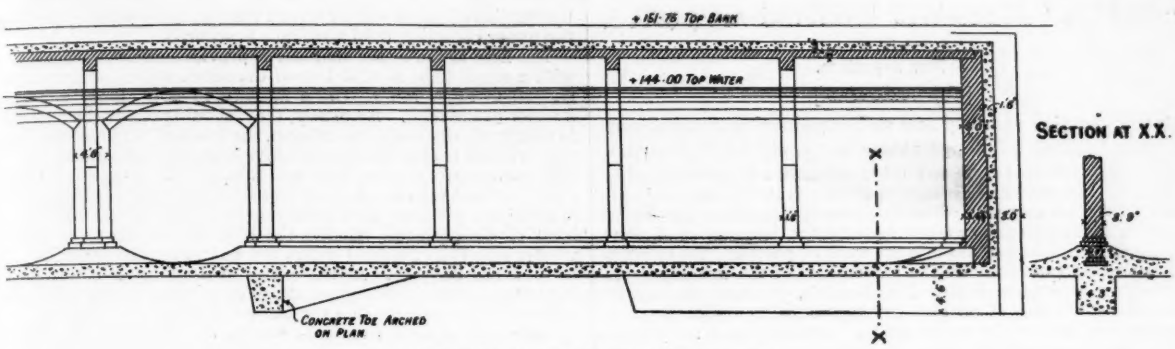


View of Interior of Reservoir, showing Form of Floor.



View showing Division Wall in Centre of Reservoir.

Arches for Supporting Roof of North-East Reservoir.




Longitudinal Section of Part of the Reservoir.

of the reservoir is above the natural surface of the ground, is laid at a slope of 2½ to 1 on the east side, and 3½ to 1 on the north and west sides, and is formed of alternate horizontal layers of earth and burnt ballast—20 inches of the former to 4 inches of the latter.

The reservoir, which measures 824 feet in length between the walls, with a maximum width of 587 feet, occupies an area, including the banks, of about 14¼ acres. The actual water area is a little over 10 acres; and the top water level is 144 feet above Ordnance datum. The bottom of the main body of the reservoir is at an elevation of 122 ft. 6 in. above Ordnance datum; the depth of water being 21 ft. 6 in. A portion of the north-eastern section of the reservoir is 12 ft. 6 in. deeper than this; so that the greatest depth of water is 34 feet.

In the construction of the reservoir, a large amount of material was used; the number of bricks being over 16 millions—all made from the material taken out of the excavations. Concrete, in the proportion of 6 to 1 of Thames ballast and portland cement, amounting to 95,000 cubic yards, was used in the foundations, walls, floor, and covering of the reservoir; the quantity of cement used being 20,200 tons. The lengths of the covering arches, if placed in a single line, would reach about four miles; while the length of the jack arches connecting the piers totals over three miles. The quantity of excavation below the natural surface of the ground was 173,000 cubic yards; and upwards of 14,000 cubic yards of clay were used in the puddle wall, &c.

The reservoir is divided into four sections, each capable of being filled or emptied independently of the others. The source of supply is a 42-inch pipe connected by a branch to the Board's 42-inch main, which conveys filtered water from the pumping-station at Hampton to the Nunhead reservoirs—a distance of about 17 miles. The outlet-pipes are also 42-inch. Each of the four divisions of the reservoir communicates with, and is connected to, a series of valves in a valve-house, situated at the junction of the four sections of the reservoirs, whence the water is distributed to the Board's districts as required. The outlay upon the reservoir, including the cost of the land and other expenses, will amount to approximately £236,000.

Adjoining the reservoir is situated a deep-well pumping-station; the well being 11 feet in diameter and of a depth of 300 feet, about 150 feet of which is into the chalk. Headings or tunnels have been driven in several directions, amounting in length to about 3400 feet; and a large quantity of water has been tapped and is brought to the surface by means of two sets of three-crank vertical triple-expansion engines, coupled to 18-inch deep-well pumps of 5-feet stroke. The steam for the plant is generated by six Babcock and Wilcox water-tube boilers. The water thus pumped can be either delivered into service-mains for conveyance to the Nunhead or the Forest Hill service reservoir, or into the new reservoir.

The whole of the works were designed and have been carried out under the supervision of Mr. J. W. Restler, M.Inst.C.E., the Chief Engineer to the late Southwark and Vauxhall Water Company, and now Deputy Chief Engineer to the Board.

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### The Opening Ceremony.

The visitors began to arrive shortly after two o'clock, and proceeded along the top of the reservoir, the site of which was gaily decorated with flags, to the central valve-house, where they were able to see, at the bottom of a spacious well, how the large mains were connected, and inspect the series of valves, by Messrs. Glenfield and Kennedy, Limited, by which the water will be directed into the required section of the reservoir, and the three Venturi meters (two in operation) automatically recording the quantity delivered. Close to the valve-house they found access to the interior of the reservoir, which was lighted by incandescent electric lamps. The sight which presented itself—the rows of vast arches stretching away into the distance—must have astonished many of the visitors, especially the ladies. Owing to the conformation of the floor, care had to be taken in walking over it; but attention had been called to this matter on the paper setting out the order of proceedings, and, moreover, boards had been laid to facilitate movement. A raised platform had been erected above the inlet-pipe, where the ceremony was to be performed; and others were provided at a lower elevation on either side.

The Lord Mayor, who was accompanied by the Lady Mayoress, and attended by the Sheriffs, arrived at the reservoir about a quarter past three, and was received by the Chairman of the Board (Mr. E. B. Barnard, M.P.), the Vice-Chairman (Mr. G. S. Elliott), and the other members of the Reception Committee, and conducted to the upper platform, upon which were assembled members and the chief officials of the Board, representatives of the municipal authorities of London, and specially invited guests, including Sir Henry E. Knight, the Chairman, and some of the Directors, of the late Southwark and Vauxhall Water Company. The guests having assembled, Mr. Barnard, before asking the Lord Mayor to perform the ceremony which he had kindly undertaken, made a few remarks on the importance of the Board's work in providing a supply of water adequate in quantity and satisfactory in quality for some 7 million people. With regard to the reservoir they were inaugurating, he expressed his pleasure at seeing the Chairman and some of the Directors of the late Southwark and Vauxhall Water Company, as it was they who had been responsible for the great work in its inception. Apart from this, its completion was one of the many services which a progressive Water Board were rendering to London. He dwelt upon the value of the engineering knowledge and sound advice of Mr. Restler, by whom (as the Company's Chief Engineer and the Deputy Chief Engineer of the Board) the work had been designed and carried out. He concluded by asking the Lord Mayor to turn the water into the reservoir, which he said was to be named the "Beachcroft," after his predecessor in the chairmanship of the Board. Before complying with the request, his Lordship paid a tribute to Sir Hugh Myddelton for his great achievement in bringing a supply of water to London, and pointed out that it was to private enterprise—that of the Water Companies—that this supply had been maintained and developed. It was now in the hands of the Water Board, who had to be governed by a "two-power standard." They had to bear in mind not only the growth of London, but also the possibility of a great drought. He therefore congratulated them on the completion of the reservoir, of which he said he should like to have been the Engineer or the Contractor, and expressed his pleasure at learning that it was to receive the name of Beachcroft, which had long been associated with municipal affairs in the City of London.

Mr. Restler then presented the Lord Mayor with a key, and explained how, by means of electric connections, the water would be made to flow into the reservoir when the key was used. His Lordship then turned on the water, which shortly afterwards began to rise like a huge fountain from the upturned end of the inlet-pipe, and flow over the floor of the reservoir. A powerful beam of electric light was thrown on to the jet to illuminate it; and the beautiful effect elicited hearty cheers.

The visitors then ascended to the surface, and assembled in a marquee, where the rest of the programme was gone through. Mr. Barnard presided, and called upon Sir Henry Knight to make a few remarks. In doing so, Sir Henry referred to the circumstances which led to the decision to construct the reservoir, and to the difficulties which had attended the work. He said the Southwark and Vauxhall Water Company were faced with the necessity of preparing to meet contingencies; and they determined on constructing the reservoir now completed. He testified to the ability displayed by Mr. Restler in the capacity of Engineer to the Company, and claimed that they handed over to the Water Board the best set of works of any of the London Water Companies. He heartily congratulated the Board on the completion of the reservoir, and the Lord Mayor on having discharged a great Metropolitan duty in declaring it open. He expressed the opinion that more stores of filtered water of a similar character to this were needed for London. Mr. C. E. Hearson, the Chairman of the Works and Stores Committee of the Board, proposed a vote of thanks to the Lord Mayor and the Lady Mayoress, and gave some interesting particulars in regard to the early history and present extent of the Metropolitan Water Supply; pointing out that the addition of the reservoir just opened brought up the storage to 304 million gallons. Mr. G. S. Elliott, the Vice-Chairman of the Board, seconded the proposition, and it was carried by acclamation. His Lordship acknowledged the vote, and proposed a similar compliment to the Chairman, with whose response the proceedings closed.

Light refreshments were then served in an adjoining marquee, and the company gradually dispersed; many of the visitors, before leaving, inspecting the pumping-station.

# "ROSTIN" AUTOMATIC LIGHTING APPARATUS.

## A New Departure.

[COMMUNICATED.]

MOST gas engineers are by now well acquainted with the Rostin system of automatic lighting for street-lamps, which is in more than one respect distinct from any other apparatus at present on the market. The principal distinctive feature is that it not only consists of the working part which regulates the supply of gas to the burner, but is also using an arrangement for the purpose of regulating the admission of gas into the working parts and the exhaust of same, and thus controls the movements of the working parts according to requirements. Besides this, the most important advantage is that it enables the apparatus to utilize the full pressure of gas in the mains for the operation—not merely relying upon a small margin over and above the maximum day pressure. Consequently, having a great available motive force, the apparatus does not require a special increase of pressure to be given in order to operate the lamps. The distinctive features of the Rostin apparatus have enabled it to be successful in many districts where other makes of apparatus have failed to meet the requirements of the lighting authority. In places where, owing to the large area supplied and the difficulties of distribution, no special conditions of pressure can be created, the Rostin apparatus has been found to work absolutely correctly with the ordinary increase of pressure which has to be given to cope with the evening consumption.

The arrangement consists of valves, working on the principle of the U pressure-gauge, which govern and regulate the admission of gas into an expanding chamber consisting of a steel bell sealed in mercury. This bell is fixed directly under the burner, and in rising turns by means of a ratchet-wheel an ordinary lamp-cock; this latter arrangement being also only found in the Rostin apparatus. Variations in the construction of the bell—sometimes a diaphragm—with weights on top or a tensioned spring holding same down, with different mechanical arrangements of levers, cocks, valves, &c., are extremely numerous, and constitute the bulk of the many pressure appliances in existence.

There is no doubt this system of regulating the admission of gas to the operating chamber by valves permits the widest range of fluctuating pressure to take place without any danger of the lamps being extinguished or lighted other than at the correct times. Briefly, it may be said that, where a weighted bell or diaphragm is used, the lowest point to which the pressure may drop after lighting-time without the apparatus engaging for the process of extinguishing must be in excess of the maximum day pressure. But with the Rostin, it is the minimum pressure obtaining at any time between lighting and extinguishing times—thus making the apparatus more reliable in cases where, owing to varying consumption, the height of pressure cannot be guaranteed.

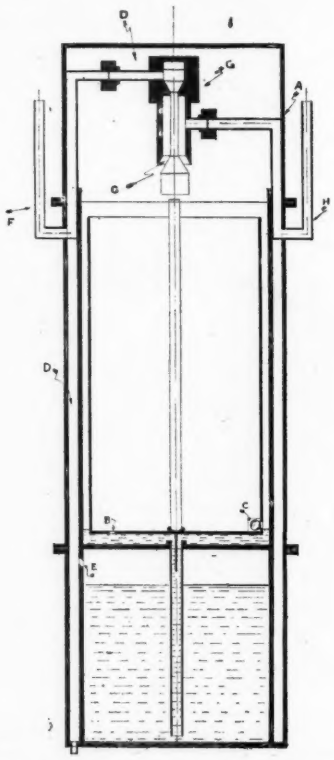
The trouble of guaranteeing a certain height of pressure has been the obstacle which has in the past prevented the adoption of automatic lighting by pressure by those towns where the difficulties of supply produce fluctuations of pressure so extensive and so irregular that an apparatus relying upon a pre-determined height of pressure could be worked only with great precautions. That such districts do exist, cannot be denied. They are generally to be found in those large towns where the consumption is heavy and irregular, and which, by the fact of having to supply a large area of public lighting, would be the most likely to receive the greatest benefit from adopting the automatic system.

In order to overcome exceptional cases of this nature, Mr. A. E. Broadberry, the Engineer and Manager of the Tottenham and Edmonton Gas Company, and Dr. Rostin have recently devised an apparatus which is of special interest, inasmuch as it renders any pre-determined height of pressure unnecessary, and at the same time gives the central control which can only be obtained by a pressure system. From long experience and a close study of gas distribution, these gentlemen have found that variations of pressure due to vagaries of consumption produce diagrams showing that the rise and fall of pressure due to the above conditions takes place comparatively slowly; and only when a definite increase of pressure is given at the governor-house do the diagrams show a sharp, quick rise. To produce an apparatus that will answer to this quick, sharp rise, and at the same time be unaffected by a slow rise irrespective of the height of pressure attained, has been the object aimed at by Mr. Broadberry and Dr. Rostin; and it may be truly said that, in succeeding in this object, they have rendered signal service to the gas industry.

The principle of the new arrangement now under notice can be best understood from the accompanying outline diagram. It represents the section of the case made of special composition capable of withstanding corrosive action. The interior of the case is divided into two main sections; the lower one consisting of a chamber filled with a non-freezing and non-evaporating mixture of glycerine and water, and the upper containing a spring-balanced float shown only diagramatically. The two chambers are separated by a horizontal metal partition, which has at its centre a pipe extending downwards nearly to the bottom of the lower chamber. In the wall of this outer case is constructed a tube D, having an inlet into the lower chamber at the point E. To this pipe is led an elbow F, which is connected to the stand-pipe of the lamp. It will be seen that pressure of gas in F will cause the level of the glycerine mixture to fall in the lower chamber; and the surplus of liquid will be forced through the central pipe into the upper chamber, until a balance is secured.

The float in the upper chamber is provided on its lower surface with a small hole B, of a known diameter, which is accurately gauged to allow the glycerine mixture to flow slowly into the interior of the float. Evidently, then, should pressure be brought to rise gradually in the gas system, the level of the glycerine will rise to equal height simultaneously within and outside the float, and no movement of the float will take place. Supposing, however, that a sharp rise of pressure occurs, such as would happen if additional pressure were intentionally sent from the works, the level of the glycerine outside the float would rise at a much greater rate than the level within the float, and the latter would be rendered buoyant. At the centre of the interior of the float is a brass rod projecting upwards, so as to come in contact (after sufficient movement) with a vertical valve G, which consists of an arrangement of coned surfaces which, though being gas-tight, slides very freely, and provides sufficient opening to allow a full pressure of gas to be transmitted past its orifice. The action of this valve is to open up a passage for the gas-pressure between the point D through the valve D G to the pipe A H, which passes to a bell floating in mercury, which, on rising, operates an absolute lamp-cock by means of a ratchet-wheel turning in one direction only; the gas being transmitted to the bell at full pressure.

After the apparatus has performed its work in lighting the lamp, the glycerine mixture gradually percolating through the small hole in the float attains the same height inside the float as




**A Modified "Rostin" Gas-Lighting Apparatus.**

outside. Consequently, the float drops, and the valve G is closed, and the outlet is opened, allowing the bell operating the cock to fall, and cause the levers to engage in the next step of the ratchet-cock ready for the subsequent operation, when another moderately sharp rise will extinguish the light.

It has further been found necessary to make special provision for districts where the pressure falls rapidly previous to lighting-time, and then only rises to a height lower than was previously attained; and this is accomplished by introducing a special valve C, which allows the glycerine mixture to get out of the float as quickly as the level falls round the float—thus bringing the apparatus instantly into working condition.

The adjustment of the apparatus is exceedingly simple. A pointer is provided for the purpose, which, on being moved to the requisite figure, renders the float heavier or lighter, and making the apparatus answer to a small rise or to a large one as may be required. From long and exhaustive experiments conducted over an extensive period, it has been proved that the apparatus can be relied upon to work absolutely satisfactorily with a sharp rise of 4-10ths, irrespective of what the initial pressure may be; and at the same time it remains unaffected by a slow rise of any height.

It will be seen that the apparatus marks an entirely new departure in automatic lighting, as the principle employed is quite a new one, and constitutes a very valuable adjunct to the already well-known Rostin apparatus, which has achieved such success in this and other countries.

# BOLZ'S ARRANGEMENT OF VERTICAL RETORTS.

In last week's issue of the "JOURNAL" (p. 292), some particulars were given of results obtained at Trieste by the use of a new bench of twenty vertical retorts erected according to the designs of Herr Christian Bolz, the Manager of the Buda-Pesth Gas-Works. A section of the bench was reproduced from the pages of our Italian contemporary "Il Gaz;" and we are now enabled to give some further illustrations and particulars of the system through the issue by the British Patent Office of Herr Bolz's complete specification.

In view of the very general interest that is being taken in the construction of the various systems of vertical retorts, it will be of value to give some extended extracts from the specification, so as to show what were in the patentee's mind as desirable modifications of some of the well-known and previously described arrangements.

He says: In all gas-generating furnaces with vertical retorts, and with producers beneath the floor for the workmen engaged in emptying the retorts, the conduits for the air for combustion to be preheated, and the regenerative apparatus arranged beneath the floor near the producer, the supporting piers or pillars bearing the retort or combustion chamber above simultaneously serve for the reception of the conduits or flues for the ascending preheated air for combustion and the descending "smoke gases." Moreover, the bracing of furnaces with producers arranged beneath the working floor is effected by holding together both the lower part of the furnace with the producer, and also the supporting piers or pillars for the retort-chamber, and also the retort-chamber itself at the top, by a common system of bracing. This bracing is normally effected as follows: On two opposite sides of the furnace, a number of vertical buckstaves extending up from the foundation surround the masonry of the furnace; and each two oppositely-arranged buckstaves are connected top and bottom by tie-rods. Further, in all gas-generating furnaces heretofore built with vertical retorts or chambers, whether the producer is positioned as above described or is arranged above the working floor, the heating of the retort-chamber either takes place from one side only of the furnace—for which purpose combustion-nozzles are mounted at one side of the furnace only and the fire is conducted along substantially only the broad sides of the retorts—or if it takes place from both sides of the furnace the "fire gases" impinge directly on to the walls of the retorts, thus injuring them by erosion. All the arrangements have, however, serious disadvantages, which he proceeds to describe.

1.—The conduits or flues, built into the supporting piers or pillars, for the preheated air for combustion and for the smoke

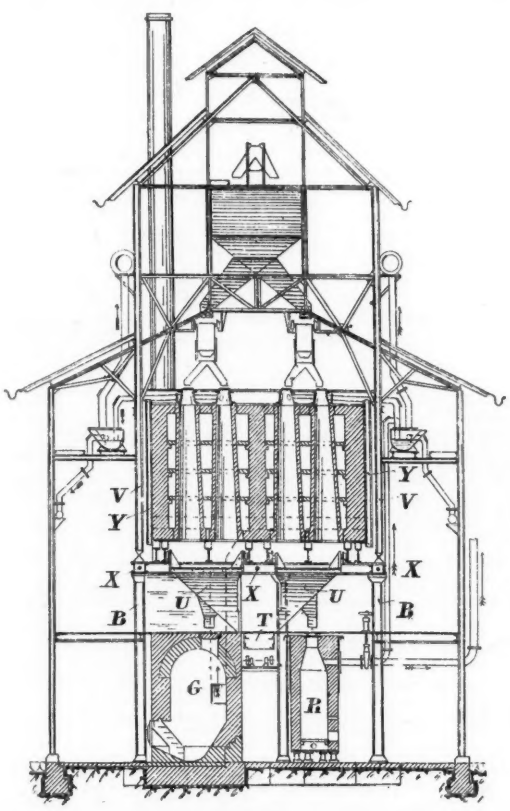



Fig. 1.

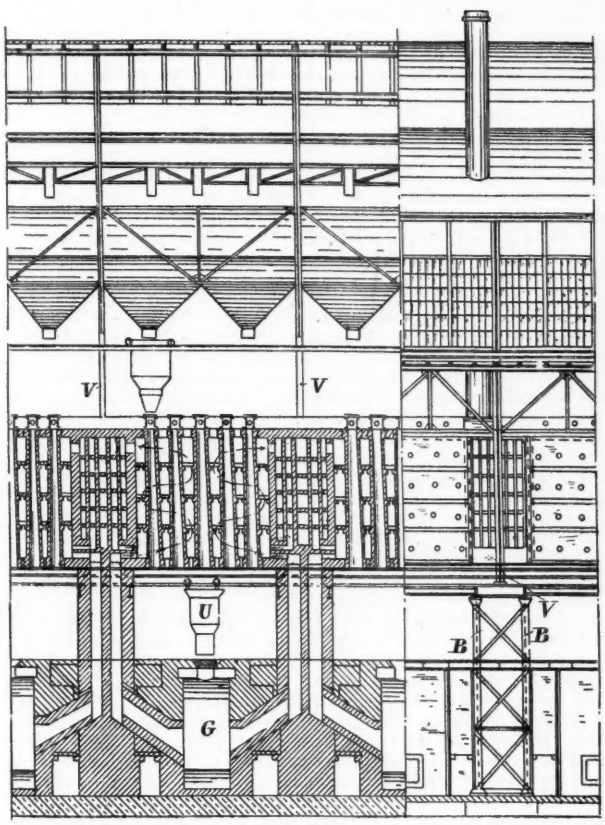



Fig. 2.

gases to be drawn away, form a continual source of leakage. They also considerably increase the cost of building the furnace by reason of the inaccessible and complicated construction, and involve losses by radiation of heat.

2.—The recuperator arranged below, by the side of the producer, obviously involves (quite independently of the fact that the space taken up, which would be useful for other purposes, is lost) the erection of a special chimney by the side of the furnace, the site of which chimney has to be deducted from the amount of land available. Since the whole of the smoke gases, for the purpose of escaping into the chimney from the top of the retort-chamber, which stands at a considerable height, must be conducted down again, the requirements of the furnace as to draught are very high. The loss of heat, however, also increases the draught; while the chimney, requiring a separate site at the side of the furnace, renders the plant more expensive.

3.—The heating of the retort-chamber of a furnace with vertical retorts from only one side of the furnace is, however, a specially weighty disadvantage of all known constructions, since with this method of heating the number of retorts to be united in one furnace is limited.

This is based on the following consideration: The vertical retorts are (as is known) made conical—that is to say, the retorts become wider from above downwards—in order to permit smooth sliding out of the coke. The coal capacity of the retorts is thus considerably greater at the lower than at the upper part.

In order to carbonize the coal uniformly throughout the whole height of the retort, it is necessary to heat the lower part of the retorts (with the larger coal-capacity) more strongly than the upper—that is to say, the heating of the retorts must decrease uniformly from the bottom to the top. This is effected by dividing the retort-chamber by means of a number of horizontal partitions into superposed flues, through which the heating gases are drawn in a zig-zag path from the bottom to the top. The principle on which vertical retorts are heated consequently differs entirely from that which is adopted for heating horizontal or inclined retorts.

It is thus clear that, if heating gases be supplied to the retort-chamber from one side of the furnace only, in a large group of retorts standing one behind the other, the retorts at the side of the furnace remote from the heating nozzles will be heated less at the lower part than those lying next to the heating nozzles. The further result of this method of firing is that the fall of temperature is greater towards the upper ends of the retorts; so that the coal is only irregularly carbonized—that is to say, the complete removal of the gas from the whole charge of the retorts lasts a considerably longer time than it should do.

This obviously only appears when, as above mentioned, a large number of retorts standing one behind the other is combined into a group. In the furnaces, heretofore used in practice, each two retorts only are combined into a group; and this number may be taken as a practical limit in heating from one side of the furnace only. For economical reasons, however, attempts must be made to combine a larger number of retorts in a single retort-chamber

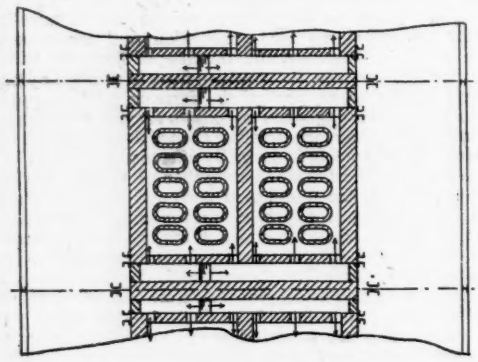


Fig. 3.

in a furnace supplied from only one producer. Both the capital cost and the cost of maintenance are, of course, relatively less with the larger number of retorts combined into one furnace.

The method of firing heretofore usual in the retort-chamber along the broad sides of the retorts has, too, the disadvantage that the fire is too much confined, whereby free development of the flames is interfered with. The prevention of the free development of the flames obviously gives a lower efficiency of the furnace. If the fire, however, passes along the narrow sides of the retorts, a larger free space is afforded thereto for development.

4.—A common system of bracing for the elevated retort-chamber, and the producer arranged beneath and the supporting piers or pillars, only imperfectly attains the object sought. Obviously the greatest expansion occurs at the parts of the furnace where there is the highest temperature. The highest temperatures occur in the retort-chamber at the top; while the temperatures in the producer built between the supporting piers or pillars of the retort-chamber, and also in the conduits or flues built into the supporting piers or pillars, remain very considerably below the temperature of the retort-chamber.

Thus, while there is only a relatively low temperature up to the base-plate of the retort-chamber resting on the supporting piers or pillars, the temperature reaches its highest value in the combustion chamber above this base-plate. The temperature thus increases quite suddenly in this zone.

If, now, the whole substructure of the furnace and of the retort-chamber is held together by common vertical buckstaves, the yielding of the bracing due to the great expansion of the retort-chamber causes an equally great yielding of the substructure of the furnace; while the expansion of the masonry in the substructure of the furnace, corresponding to the lower temperature there, is much less than in the upper part of the furnace. The unavoidable result of this is a loosening of the bonding of the masonry and consequent leakage.

The present invention has for its object the construction of a furnace with vertical retorts in which the faults indicated above are said to be entirely avoided. Figs. 1, 2, and 3 show one example of construction, consisting of several furnaces each having twenty retorts built together into one block. The upper part of the furnace receiving the retorts is mounted on a carrier-frame or grid supported on transverse girders carried by columns. The heating gases generated in the producer rise on both sides in masonry conduits to distribution passages arranged on the two opposite sides of the furnace near the retort-chamber. Above these passages is built, throughout the whole breadth of the retort-chamber, the regenerative apparatus with the passages for the air for combustion to be preheated.

From the distribution passages, the heating gases pass into the retort-chamber between adjacent lines of retorts and between the outer lines of retorts and the walls of the furnace, through nozzles or jets; and from the air-passages above preheated air for supporting combustion passes into the retort-chamber. The combustion gases thus heat the retort-chamber from two opposite

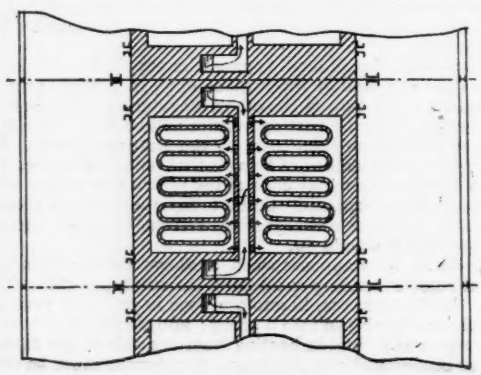


Fig. 6.

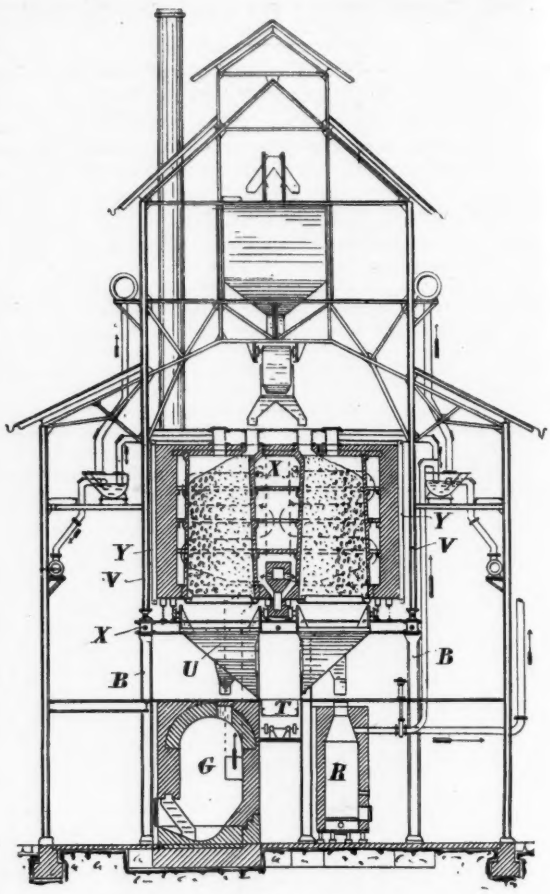



Fig. 4.

sides of the furnace simultaneously, in order to pass through the retort-chamber along a zig-zag path in the manner indicated by the arrows. In this arrangement, the retorts are made flat, and are built into the retort-chamber in such a manner that the heating gases flow past the narrow sides of the retorts.

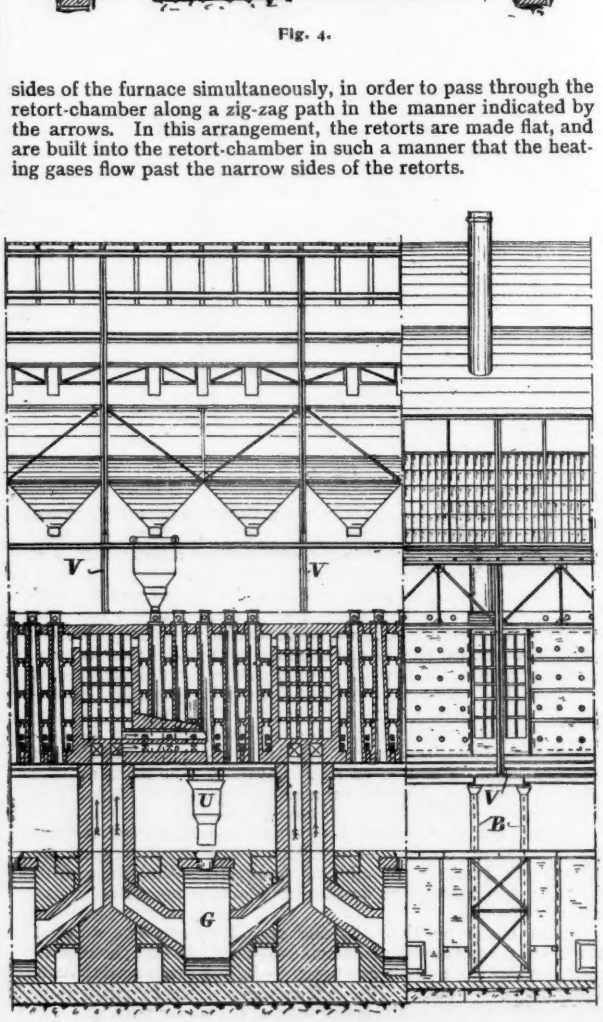



Fig. 5.

The simultaneous supply of heating gases from the producer to two opposite sides of the furnace accordingly permits in a perfect manner uniform heating of even a larger number of vertical retorts arranged one behind the other in a group than was possible with furnaces heretofore known. The number of retorts combined into one furnace and heated by one producer only can, it is said, be more than doubled in this construction; and the cost of erection of the furnace will obviously be less per unit output, as also "the cost of maintenance will obviously be less with the increased efficiency."

Special stress is laid by the patentee upon the fact that, for a given total output, the number of furnaces required, and with them the number of producers necessary for heating the retorts, can be reduced to about one-half with this form of construction as compared with those heretofore known. The area of the site of the furnace is less by about 60 per cent. Considerable economy is also claimed in labour by the smaller number of producers to be attended to.

The form shown in figs. 1, 2, and 3 comprises twenty-retort furnaces with a partition-wall cutting the whole retort-chamber into two halves. As can be seen from fig. 2, the length of the whole furnace beyond the total length of the retort-chambers is dependent upon the thickness of the masonry conduits. The latter, accordingly, determine the distance apart of two retort-chambers where a number of furnaces are built side by side. This latter space above the distribution passages is in every case sufficient for arranging the passages for the air for combustion to be preheated. Thus the whole space beneath the working floor, with the exception of the space required for the producer, can be utilized for other purposes. A further result of the arrangement is that the amount of space occupied and the cost of erection are said to be reduced, and also separate conduits for carrying up the preheated air for combustion (such as are necessary where a recuperator or regenerative apparatus is arranged below the working floor) are avoided.

After the heating gases have left the top of the retort-chamber on both sides, they pass through the passages, in which they give up their heat as far as possible to the air for combustion, in order finally to escape into a separate chimney built directly on the recuperator of the furnace. A separate chimney built beside the furnace—such as is necessary in connection with the recuperator arranged beneath the working floor as in the forms of construction heretofore known—is therefore dispensed with, and with it the separate conduits for the purpose of conducting the smoke gases down.

In the construction shown, any passages between the working floor and the retort-chamber, except those for carrying up the heating gases from the producer, are accordingly avoided; so that any danger of leakage which occurs when there are a number of passages or conduits is not present here. "The whole construction of the furnace gains in simplicity and lowness of cost by dispensing with the numerous conduit connections."

A further advantage of the arrangement of regenerative apparatus is that the requirements of the furnace as to draught are reduced to the lowest possible degree, since the smoke gases leave the furnace along the shortest path, in order to be carried up directly by the separate chimneys mounted on the recuperator. Special attention should also be drawn to the fact that the simultaneous supply of producer gas to two opposite sides of the furnace is here not bound up with the position of the producer relatively to the retort-chamber. Thus the producer could be arranged above the working floor near the retort-chamber.

As already mentioned, in the form shown, the space below the working floor (with the exception of that required for the producer) is available for other purposes; and should this space be employed for the erection of a water-gas producer, for the purpose of utilizing the heat of the glowing coke falling out of the vertical retorts, the coke can be delivered directly into the water-gas producer by conveyor-rakes, in order to produce water gas directly from the coke. Further, in order to obtain a mixed gas having a specially high value with respect to lighting and heating power, the decomposition of carburetting oils can take place at the end of the distillation period by means of the incandescent coke in any individual retort. In fig. 1, the arrangement is shown with the water-gas producer R. The arrangement is, moreover, such that the free space still available in the middle of the furnace, between the heating-gas producer G and the water-gas producer R, is utilized for erecting a mechanical coke-conveyor T. The erection of such a coke-conveyor in the middle of the furnace beneath the working floor is of considerable advantage, since the whole of the coke left over after feeding the two producers can be taken up, without trouble, in the simplest manner and conveyed away.

For receiving the glowing coke falling out of the retorts and conducting it away into the two producers or into the coke-conveyor, the two trucks U, formed as suspended railway trucks, are employed. These trucks are made in the form of four-wheeled suspended-railway trucks, the wheels of which move on the lower flanges of the girders above. The trucks are so arranged that, by throwing over a valve or flap arranged on the inclined bottom, or by adjusting a slide, the glowing coke can be drawn off either into one of the two producers or into the coke-conveyor channel. This method of transport would obviously be rendered considerably more difficult if, for example, the coke-conveyor were mounted on one side of the centre line of the furnace, or by the side of the furnace. Again, since with vertical retorts the height of the lower door of the retort is limited in respect of convenient operation by hand, it would not, with any other position of the coke-conveyor, be possible to obtain the necessary inclined plane for the automatic delivery of the coke from all the retorts to the conveyor.

The bracing of the furnace shown is arranged so that the elevated retort-chamber, which has the highest temperature, is held together by a special system of bracing entirely separate from the bracing of the substructure of the furnace. Both on the longitudinal and also the transverse sides of the furnace, the body of masonry in the example given is held together by bracing bars or buckstaves Y, rigidly connected at the bottom to the iron base-plate which extends through, and rests on, the carrier-frame; while above the masonry of the furnace the two oppositely arranged buckstaves are connected together by tie-rods. The columns B, with transverse girders bearing the carrier-frame and the braces X, form a rigid trussed underframe, on which the whole superstructure of the furnace rests. The latter can therefore expand freely on all sides without in any way impairing the stability and gas-tightness of the substructure.

By this means, it is also rendered possible to use the columns B without any danger for carrying the roof of the furnace-house—for example, by means of the extensions V. This would obviously not be possible if the columns formed a rigid system of bracing with the superstructure of the furnace, in which case the columns would move to and fro in accordance with the expansion of the furnace. The advantage obtained by this improvement is two-fold—in the first place, by the separate bracing, it is ensured that the masonry in the substructure shall remain gas-tight, and also by using the columns B great economy can be effected.

Figs. 4, 5, and 6 show a further example of construction, in which retorts of large coal capacity are employed. In this form, the simultaneous heating of all the retorts can be obtained if the combustion nozzles are mounted not on the two sides of the retort-chamber, but in the median line thereof between two rows of retorts; so that the heating of the retorts takes place simultaneously on two sides of the furnace. In principle and method of operation, this firing is exactly the same as in the other form of construction. The heating gases generated in the producer G ascend on two sides in passages to the distribution passage arranged in the median line of the retort-chamber between two rows of retorts, in order to pass from these passages through the nozzle-apertures on both sides into the combustion-chamber. Above the passage is built a distribution passage for the preheated air for combustion, which is fed at both ends from the recuperators or regenerative apparatus arranged on both sides of the retort-chamber. The heating gases thus pass simultaneously to two opposite sides of the furnace, in order to pass in a zig-zag path through the retort-chamber.

The coal is introduced by allowing it to fall at a definite velocity on to an inclined plane provided in the upper part of the retort or of the upper mouthpiece—in this manner separating the coarser pieces of coal from the fine coal.

Having thus described his invention, the patentee declares that he is aware it has already been suggested to mount vertical retorts in a retort-chamber into which flame-gases enter from separate combustion chambers and impinge directly on to the lower parts of the retorts from opposite sides of the retort-chamber; horizontal baffles being arranged in the retort-chamber to control the flow of the hot gases therein. Also that it has already been suggested to make furnaces for use in smelting iron, in which vertical round retorts are arranged in rows in a retort-chamber into which the fuel gases are introduced through openings arranged on both sides of the retort-chamber between the rows of retorts. He therefore does not claim such arrangements broadly or generally; but what he claims is:

(1) A gas-generating furnace with vertical flat retorts or chambers, characterized in that the burners conducting the heating gas and the air for combustion into the retort-chamber are arranged at the two opposite sides of the furnace (which sides are parallel to the broad sides of the retort) between adjacent lines of retorts and between the outer lines of retorts and the walls of the furnace, and that at the same time the flame-gases in the retort-chamber are conducted upwards in a zig-zag path from the bottom to the top.

(2) A gas-generating furnace with vertical flat retorts or chambers, characterized in that, in the centre line of the furnace at the bottom of the retort-chamber, a heating-gas collecting-passage fed from both ends is arranged between two rows of retorts, from the burner-nozzles of which collecting-passage the heating gas flows into the retort-chamber on both sides and is guided in the retort-chamber in a zig-zag path from the bottom to the top.

(3) A gas-generating furnace with vertical flat retorts or chambers, characterized in that the bracing of the retort-chamber at the top is effected independently of the bracing of the lower part of the furnace, and that the columns carrying the retort-chamber are simultaneously used for supporting the roof of the furnace-house.

(4) A gas-generating furnace with vertical flat retorts or chambers, characterized in that a water-gas producer is arranged directly beneath the vertical retorts or chambers beneath the working floor near the heating-gas producer for the retorts, and that a mechanical coke-conveyor is mounted in the middle of the furnace between the heating-gas producer and the water-gas producer, by means of which conveyor the coke that remains is quenched and carried away.

## COMBINED VERTICAL RETORT AND WATER-GAS GENERATOR.

Among the specifications issued last week by the English Patent Office was one—No. 16,614; Aug. 6, 1908—communicated from the International Gas Development Company, of Manhattan, New York. It described a "process of manufacturing illuminating gas consisting in producing coal and water gas by forcing steam into contact with coal passing through a distilling chamber, drawing off the products from the distilling chamber, and enriching same by adding oil-enriched water gas produced by passing steam and oil vapour through a heated bed of material capable of acting as a carrying agent to combine the oxygen of the steam with the carbon of the oil vapour," or else through a heated bed of iron. The process is designed to manufacture the mixed coal and water gas and the oil-enriched water gas separately, but to combine them in a permanent gas without the use of a superheater, if they are brought together at the same temperature; and thereafter no fixing is required.

It is preferable, but not requisite, the patentees point out, that the process be carried out in one and the same general apparatus to ensure the gases meeting each other while at the same temperature—namely, that of the hydraulic main. Therefore, "the invention specifically considered contemplates the manufacture of the gas in a single piece of apparatus in which the entire product is continuously manufactured in a simple and highly economical way."

Fig. 1 is a plan of the plant used to carry out the process. Fig. 2 is a vertical section on the line 2. Fig. 3 is a vertical section on the line 3. Fig. 4 is a vertical section on the line 4.

A is a furnace common to, and heating, all the retorts. Above the furnace is a double battery of three retorts B, B, and C—the B retorts being for coal and water gas, and the C retorts for oil-enriched water gas. Any number of retorts may be in one furnace; and the ratio of coal and water gas retorts to oil-enriched water-gas retorts will vary according to conditions—quality of coal, candle power desired, &c.

Referring first to the coal and water gas retorts (figs. 2 and 4), B is a chamber or retort shown as vertical, "so that gravity may serve to pass finely-divided coal through it;" but it may be inclined or horizontal, and the coal blown through. Steam, preferably superheated, is admitted through either of the pipes *b* or $b^1$. As a convenient means of superheating the steam, it is passed through drums *a*, which run through the furnace and receive heat from it. With this arrangement, the steam that is used in the different retorts will enter at substantially the same temperature as the retort.

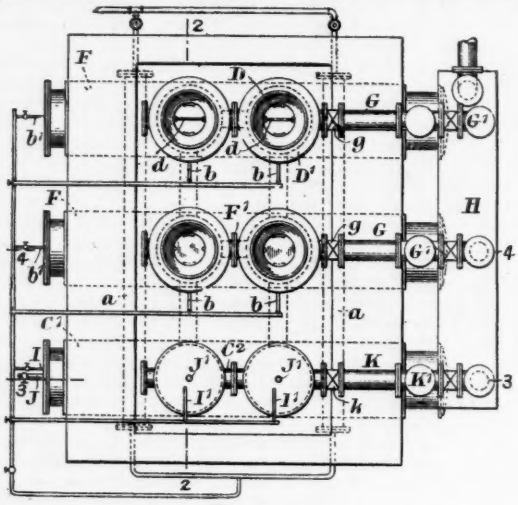



Fig. 1.

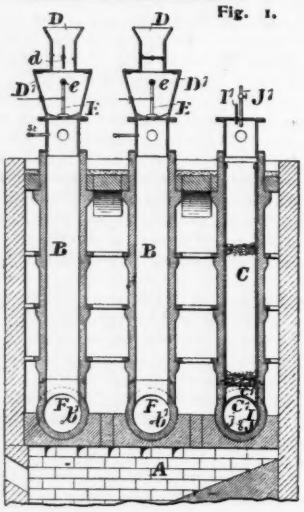



Fig. 2.

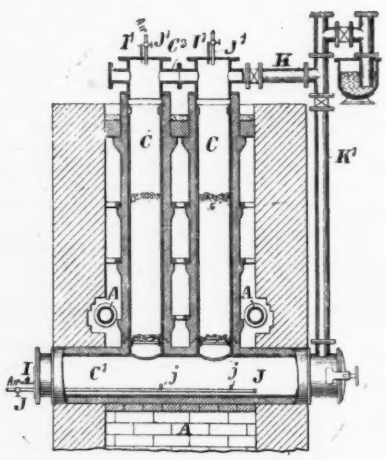



Fig. 3.

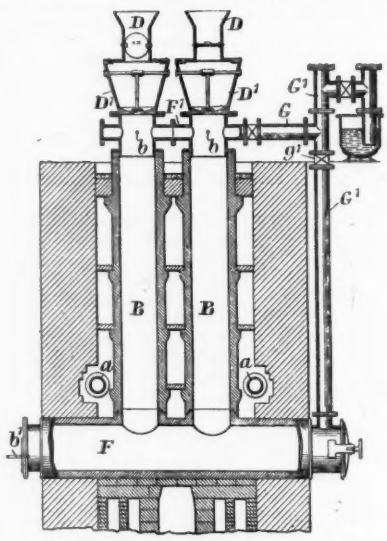



Fig. 4.

At the top of the retort is a compound coal-shoot composed of an upper hopper D and a lower one $D^1$ separated by a damper. The upper hopper is smaller than the lower one; so that, from time to time as required, it may be emptied into the lower by opening the damper. The flow of coal from the lower hopper into the retort is controlled by an adjustable gate E, movable about a pivot so as to uncover the opening into the retort, by means of a rod passing through the side of the hopper.

At the bottom, the retort communicates with a horizontal chamber F, which is common to the entire row of retorts in the battery (three rows of retorts are shown in the engravings). Access may be had to the interior of the chamber through a manhole. The retorts in each row are also connected together at the top by a pipe $F^1$; the pipe G from the last retort in the row connecting with the pipe $G^1$ from the chamber F. Pipes G $G^1$ are provided with valves, so that either may be used; and from their meeting point the pipes communicate directly with the hydraulic main which is common to all the retorts in the battery.

Referring, now, to the oil-enriched water-gas retorts, shown particularly in figs. 2 and 3, C is a chamber or retort preferably provided with an iron lining. It is shown as vertical merely for convenience in building the battery, as it may be horizontal or inclined. It is partially filled with pieces of iron held up by a perforated plate. The vertical chamber at its bottom opens into a horizontal chamber $C^1$ over the furnace; and leading into this chamber are the steam and oil inlets I and J respectively. Similar steam and oil inlets $I^1$ and $J^1$ are provided at the top of the chamber; and either set may be used. The steam may be drawn from the common source through the drums *a*, and be thus preheated. The inlet for oil passes into the horizontal chamber, and is provided with nozzles from which it issues as a vapour.

The retorts in each row are also connected together at the top by a pipe; the pipe K from the last retort in the row connecting with the pipe $K^1$ from the chamber $C^1$. The pipes K $K^1$ are provided with valves, so that either may be used; and from their meeting point they communicate directly with the hydraulic main, which is common to all of the retorts in the battery.

The operation of the apparatus is as follows: The furnace A is heating the entire plant. The hoppers D on the B retorts are filled, and finely-divided coal is falling through the retorts. Superheated steam is being supplied to the B retorts through the steam-inlets $b^1$, and, with one valve closed and the other open, the products are passing to the hydraulic main through the pipes G. The coal falling through the retorts is quickly heated and distilled, while at the same time the steam is disintegrated; the result being the formation of mixed coal and water gas, which passes out through the pipes G to the hydraulic main.

At the same time that this is going on in the B retorts, superheated steam is entering the chamber below the C retorts, through the steam-inlets I, where it meets, and mingles with, the oil vapour issuing from the nozzles. The mixed steam and oil vapour then passes up through the bed of hot iron, which serves as a carrying agent to combine the oxygen of the steam with the carbon in the oil, whereby oil-enriched water gas is formed without destroying the iron bed. This oil-enriched water gas passes out through the pipe K to the hydraulic main.

The coal falling through the B retorts is distilled and becomes coke, which is withdrawn from the bottom through the manholes at the ends of the horizontal chambers. The other bye-products are collected in the usual manner.

## ANALYSIS OF AIR AND GAS.

At the Meeting of the Society of Public Analysts last Wednesday, Mr. W. J. A. BUTTERFIELD, M.A., F.I.C., read a paper on the above subject, of which the following is an abstract.

The methods of analysis described referred only to the estimation of moisture, carbon dioxide, methane (fire-damp), or small quantities of other combustible gases, oxygen, and, by difference, nitrogen. The methods had for the most part been devised or perfected, either independently or with the aid of collaborateurs, by Dr. J. S. Haldane, F.R.S.; but the original descriptions of them are scattered, and certain modifications have been introduced aiming at greater ease and certainty of operation. The estimation of moisture must necessarily be carried out on the spot; and in his paper the author referred in detail only to the gravimetric chemical method, which, with the precautions he indicated, admits of a far higher degree of accuracy being attained in the estimation of moisture than is afforded by any other chemical or any physical (psychrometric) method. The absorbent used is granulated pumice saturated with concentrated sulphuric acid. The estimation of moisture by this method is conveniently made in conjunction with the gravimetric determination of the carbon dioxide in air, for which the form of double absorption-tube which he exhibited is used; the absorbent in this case being freshly prepared granulated soda-lime. This is the most accurate known method of determining carbon dioxide in air; but it gives only the average content of the air for a period of not less than ten minutes. The mean error of the determinations is about 0·1 per cent. on the amount of moisture or carbon dioxide; or (say) ± 0·01 part of either constituent per 10,000 parts of air. The volumetric determination of carbon dioxide by the portable Haldane apparatus was referred to; and a modified form of the apparatus which possesses some advantages for laboratory use was described and shown. The mean error of determinations of carbon dioxide by this apparatus amounts to ± 0·2 part of carbon dioxide per 10,000 parts of air.

The use of a control-tube and a differential pressure-gauge containing a solution of caustic potash or other aqueous liquid, which was introduced in the last-named apparatus for the purpose of rendering the volumetric analysis of a gas independent of variations of temperature and barometric pressure, was referred to in connection with its general applicability to the analysis of air and gas. This control-tube and gauge are employed in the apparatus for the determination of methane (fire damp) and oxygen in air, which was next described. The methane is estimated by combustion over a heated spiral platinum wire, and absorption by caustic potash solution of the carbon dioxide produced by the combustion. The oxygen is determined by means of an alkaline solution of pyrogallol. The requisite conditions for the preparation of this solution in a maximum state of efficiency were described. The degree of accuracy attainable in the estimation of fire-damp and oxygen with the apparatus shown is such that the error in the results, stated in percentages of the original volume of air, need not exceed 0·01. A portable and a laboratory type of apparatus for the complete analysis of air to this degree of accuracy were on view.

## PETROL GAS FOR LIGHTING AND HEATING.

At the Meeting of the Royal Scottish Society of Arts on Monday, April 26—Mr. W. R. Herring, the Vice-President, in the chair—reports were submitted by a Sub-Committee, consisting of Mr. Henry O'Connor, Mr. Mackenzie, and Mr. Herring (Convener), on a communication from Mr. W. Key, on his "Centenary" air-gas turbine generator, and another from Mr. W. Shearer, on an improved apparatus for producing petrol gas for lighting and heating purposes.

Referring to Mr. Key's apparatus, the Sub-Committee said: "This device has for its object the production of lighting and heating gas by the utilization of petrol vapour in air. It appears to be distinctive in character, and differs materially from any other type on the market. The making of the turbine generator with a number of chambers keeps the pressure of the gas even and its flow uniform. The covering of the surface of the liquid contained in the generator by a film of petrol ensures the carburation of the air in proportion to the amount of petrol admitted by the regulating-tap at the top of the apparatus, which must be adjusted to suit the varying quantities of gas produced from time to time. The apparatus is very compact and easily manipulated, and can be driven by any form of power, such as a suspended weight or a hot-air engine for small installations, and petrol, water, or other motive power that may be available."

With regard to the other communication, the Committee said: "There are many different types of apparatus for accomplishing the purpose in view; but Mr. Shearer's arrangements possess some points of novelty which have not hitherto been applied to this particular purpose. The arrangement for supplying the petrol in positively regulated quantities controlled by the air-meter is very ingenious, and seems likely to carry out what is desired. The carburettor has distinctive features, novel arrangements for preventing the cooling of the moisture in the gas to too great an extent, as it is surrounded by an anti-freezing liquid contained in a tank, and the carburettor is studded with fins to rapidly dissipate the intense cold produced by the evaporation of the petrol. We have not been in a position to prove the figures as to candle power produced and the initial cost of production; but with regard to the latter, it is important to bear in mind that a very much larger quantity of petrol gas requires to be consumed in an incandescent burner to yield the equivalent of light obtained from ordinary town's gas."

The Sub-Committee expressed the opinion that both communications were worthy of consideration by the Prize Committee.

## SOUTH-EAST OF IRELAND GAS ASSOCIATION.

### Quarterly Meeting at Kilkenny.

The Quarterly Meeting of the South-East of Ireland Gas Association was held in Kilkenny last Tuesday—Mr. Jer. Grant (Kilkenny) presiding over a rather smaller gathering than usual. After viewing the works and the city show-rooms, the members were entertained at luncheon by Mr. Grant, and afterwards proceeded with the business of the meeting.

A financial statement in regard to a recent testimonial presented by the members to Mr. John Richmond, late of Kilkenny, and now in South America, was submitted by the Hon. Secretary (Mr. J. F. Tyndall, of Wicklow), as well as a reply from Mr. Richmond thanking them. The fixing of the time and place of next meeting was left to the Committee, it having been the practice to hold this particular meeting just preceding or following that of the Irish Association, and in the vicinity of, or *en route* to, the place, so as to suit the convenience of members. Owing to an alteration in the constitution of the meetings, the date of the annual general meeting was under consideration; but it was unanimously decided not to change the time or the place. This meeting is held in Waterford in the autumn, and all members are eligible to attend it; the three other meetings being open only to engineers and managers of gas-works who are members of the Association.

Two items were on the *agenda* for discussion: "First Impressions and Difficulties on Taking Charge of a Small Gas-Works," by Mr. Ellacott, of Mallow; and a "Question-Box" item, "How can Coke Sales be better Stimulated among Householders?" The latter item was, by consent, postponed; and Mr. Ellacott proceeded with his paper. It proved to be of an interesting nature, and mutually beneficial to himself and his audience. The chief points of his impressions were the possibilities of using peat in place of coke, or coke and coal mixed, as fuel in producers for heating retorts; the recovery of the sulphur in spent oxide; and the old carbonization question: Are we extracting all the combustibles out of a ton of coal? His difficulties included the getting rid of water from tar, and the counteracting of reduced receipts from slot-meters.

A hearty vote of thanks was accorded to the President for his kindly entertainment of the members; and the proceedings closed.

**Purifying Tar Oils.**—Herr W. Feld has taken out a German patent for a process for purifying tar oils; and an abstract of the specification appears in the current number of the "Journal of the Society of Chemical Industry." When hydrogen sulphide and sulphur dioxide interact in presence of tar oils, the recovered sulphur is discoloured. This can be avoided if the tar oils are treated, either simultaneously or separately, with sulphur dioxide and hydrogen sulphide, and then distilled. The resulting oils smell of hydrogen sulphide. This is no disadvantage if they are to be used for the solution of sulphur; if they are needed for other purposes, the odour can be removed by warming, or by passing air or sulphur dioxide through the oils, or by treating them with alkalis or alkaline earths in the presence of metallic salts, or with metallic oxides or hydroxides. Instead of the treatment with sulphur dioxide and hydrogen sulphide, the oils may be treated before distillation with polysulphides or salts of thio-acids in presence of acidic compounds, such as mineral acids, carbon dioxide, phenols, &c.

**Wales and Monmouthshire District Institution.**—As was announced in last Tuesday's issue, the meeting of the Institution will be held to-morrow week (the 19th inst.) in the Gas and Water Offices at Barry Dock, when the chair will be taken by the President, Mr. Thomas Acland, of Llanelly. After the election of officers for the ensuing year, the members will consider the question of subscribing to the Sir George Livesey Memorial Fund. A motion will then be submitted by Mr. Edward Jones—"That the Institution affiliate with the Institution of Gas Engineers;" and if this is agreed to, a representative on the Council will be appointed. No papers will be read at the meeting; but there will be two discussions. The first, on the "Proposed Calorific Power Standard," will be opened by the President; and the second, on "Some Points of Gas-Works Economy," by Mr. J. H. Canning. After the meeting, the members will be entertained at luncheon by the Chairman of the Barry Urban District Council and the Chairman and members of the Gas and Water Committee; and subsequently they will be conducted over the gas-works by Mr. T. E. Franklin, the Manager. Members so desiring may also visit the Barry Docks and Island.

# SULPHUR IN COAL AND ILLUMINATING GAS.

### An American Report on the Subject.

The issue of "Progressive Age" for the 15th ult. contains a report by Mr. Arthur D. Little, of Boston (Mass.), on the subject of sulphur in coal and illuminating gas. Though, as a whole, it is of more value to gas managers in the United States than to their colleagues on this side of the Atlantic, portions of the report are of sufficient general interest to justify reproduction; and these we give below.

The amount of sulphur contained in gas is naturally a function of the percentage of sulphur in the coal from which the gas is made. The quality of coal is therefore of the utmost importance to the gas manufacturer; and when he is compelled to furnish gas containing not more than 20 grains of sulphur per 100 cubic feet, he must either buy low-sulphur coal at a premium or else use expensive methods of gas purification. Even though he does choose to pay a high price for this coal, he is not assured that he will always get it. While comparatively low-sulphur coals have been available in the past, the conditions are rapidly changing; and it will be only a question of a very few years until coal containing 1 per cent. of sulphur will be practically out of the question for the gas manufacturer.

If the gas manufacturer were the only one who asked for a low-sulphur coal, his requirements might be met; but from the limited tonnage of this coal the iron and steel industries necessarily draw part of their supply, in addition to the coal derived from property which they already control and operate. There must necessarily exist, therefore, a competition for low-sulphur coal between the steel companies and the gas manufacturers, in which the latter are at a disadvantage; for, on account of the larger scale of operation of the steel producers, and of the tremendous importance to them of low-sulphur coal, they unquestionably have the first call on the supply. In order to comply with restrictions designed to mitigate an evil that has never been proved to exist, the gas companies abet a real one; for it has been thoroughly proved that sulphur in steel rails, bridge members, &c., constitutes a great source of danger and is a real menace to safety and life.

The raising or removing of the sulphur restriction in gas would result in a more economical purchase of gas coal, and make it possible to buy coal more on its real merits for gas manufacture than on this one impurity, which, in itself, is of little consequence. But even if all restrictions were removed, it would still be to the interest of the gas manufacturer to buy a comparatively low-sulphur coal, because of the expense of taking out the hydrogen sulphide, and the trouble arising from a clinkering coke. The latter is not due to sulphur primarily, but to the higher percentage of iron which is usually present with the sulphur.

The suitability of any coal for the manufacture of gas depends upon a number of factors, the most important of which are the quantity of volatile matter and the percentage of sulphur contained in it. The amount of the former is for the most part about 35 per cent. The manner in which the sulphur in coal may affect that found in the unpurified gas can be seen from the following table, which also indicates the composition of coals that are sometimes used in New England gas-works.

It will be seen that, in general, the high-sulphur coals have produced gas containing large amounts of sulphur. However, in other cases gases derived from two coals containing nearly the same quantity of sulphur differ widely in both the amount of sulphuretted hydrogen and sulphur compounds. This illustrates very well the uncertainties incident to the regulation of the

| Source of Coal. | Chemical Composition of the Coal. | | | | | Unpurified Gas. | | Illuminating Power. | Make per Retort 24 Hours; 900-1000 lbs. of Coal used with Five-Hour Charges. |
|---|---|---|---|---|---|---|---|---|---|
| | Total Sulphur. | Volatile Matter. | Mixed Carbon. | Ash. | Moisture. | Sulphuretted Hydrogen. Grains per 100 Cub. Ft. | Sulphur as Sulphur Compounds. Grains per 100 Cub. Ft | | |
| | Per Cent. | Per Cent. | Per Cent. | Per Cent. | Per Cent. | | | Candles. | Cubic Feet. |
| Half Pardee, half Westmoreland | 3·65 | 36·68 | 54·38 | 7·94 | 1·00 | 600 | 38·0 | 16·2 | 21,850 |
| One-third Pardee, two-thirds Westmoreland | 3·37 | 35·70 | 53·80 | 9·50 | 1·00 | 400 | 33·0 | 15·5 | 22,117 |
| ,, ,, ,, ,, | 2·43 | 34·49 | 56·08 | 7·46 | 0·97 | 450 | 33·0 | 15·6 | 22,891 |
| One-fourth Pardee, three-fourths Westmoreland | 2·10 | 35·14 | 56·61 | 7·29 | 1·26 | 500 | 34·0 | 16·4 | 22,612 |
| Flemington, West Virginia | 2·04 | 35·25 | 56·41 | 6·90 | 1·44 | 610 | 36·6 | 16·0 | 23,630 |
| ,, ,, | 1·87 | 35·50 | 56·56 | 7·84 | 1·10 | 600 | 38·5 | 16·0 | 23,630 |
| Stafford | 1·81 | 36·72 | 55·84 | 6·30 | 1·14 | 420 | 22·0 | 15·9 | 22,603 |
| Kingmont (W. Va.), near Fairmont | 1·66 | 35·87 | 55·79 | 7·22 | 1·12 | 305 | 19·4 | 15·9 | .. |
| Homonic | 1·55 | 34·39 | 57·09 | 7·09 | 1·43 | 485 | 25·6 | 16·8 | .. |
| Farmington (W. Va.), Fairmont | 1·51 | 36·60 | 54·08 | 7·94 | 1·38 | 475 | 24·0 | 15·1 | 21,859 |
| Westmoreland (Irwin, Pa.) | 1·39 | 34·19 | 55·57 | 8·82 | 1·42 | 400 | 25·0 | 15·2 | 23,000 |
| Kingmont | 1·20 | 36·14 | 57·27 | 5·40 | 1·19 | 400 | 24·0 | 16·5 | 23,629 |
| Farmington | 1·15 | 35·73 | 55·42 | 7·47 | 1·38 | 390 | 27·0 | 15 8 | .. |

amount of sulphur that occurs in gas where a large part of the control has to be effected by a proper selection of low-sulphur coal.

In a general way, about 60 per cent. of the sulphur in coal remains behind in the coke. The amount of gas per long ton of ordinary Westmoreland gas coal is about 10,750 cubic feet; so that where this coal contains 1·5 per cent. of sulphur, we have 0·6 per cent., or 13·44 lbs. of sulphur leaving the retorts from a ton of coal. A portion of this (probably over 2 lbs. to each ton of coal) goes into the tar; leaving about 11 lbs. of sulphur to pass on with the gas. This would give 720 grains per 100 cubic feet.

An idea of the manner of the introduction of sulphur into water gas, and the forms in which it occurs, is given by the following data, which are the average results of a large number of tests. The sulphur in the coke used in the water-gas generator varied from 1·09 to 1·75 per cent. The average sulphur in the uncarburetted or blue gas is: Sulphuretted hydrogen, 240 grains per 100 cubic feet; sulphur compounds, 18·2 grains. In the crude carburetted gas, the quantities are: Sulphuretted hydrogen, 204 grains; sulphur compounds, 15·8 grains. It was found that 65 per cent. of the carburetted gas consisted of blue gas, and 35 per cent. was derived from the cracking of the oils used in the carburettor.

It is calculated that 100 cubic feet of pure oil gas would contain 11·4 grains of sulphur as sulphur compounds, and 137 grains of sulphuretted hydrogen. In the crude carburetted gas, therefore, 75 per cent. of the sulphur compounds are derived from sulphur in the coke, and 25 per cent. from sulphur in the oil employed. The relatively crude petroleums used for carburetting water gas contain considerable quantities of sulphur. The sulphur in the oil used in the tests described above was 0·11 per cent. The sulphur which is given off by the oil in the form of gaseous compounds in the carburetting of water gas is largely present as sulphuretted hydrogen. Statements are common to the effect that the sulphur compounds in oil gas are negligible. This may have been true a few years ago with the better grades of gas oil; but at present these compounds may be considerable.

The manner in which the quantity of sulphur in coke affects the sulphur content of the gas is shown in the following table:—

| Sulphur in Coke. Per Cent. | Grains per 100 Cubic Feet. | |
|---|---|---|
| | Sulphur Compounds. | Sulphuretted Hydrogen. |
| 1·09 .. | 12·5 .. | 207 |
| 1·47 .. | 16·4 .. | 207 |
| 1·75 .. | 20·5 .. | 234 |

The total sulphur present in coke can be roughly accounted for in the following way: 40 per cent. passes into the gas, 50 per cent. goes off in the blows, and 10 per cent. goes into the ash. Of the sulphur in the oil used in the carburettor, approximately, the following distribution occurs: 65 per cent. goes into the gas, 12 per cent. into the tar, and 23 per cent. into the drips.

The removal of sulphuretted hydrogen by the condensers and scrubbers depends in a large measure upon the way in which these are handled. With the use of fresh water in the scrubbers, but little of the impurity named is taken out; but if a strong ammoniacal liquor is used, much carbon dioxide and sulphuretted hydrogen can be removed. The following results (in grains per 100 cubic feet) were obtained at Springfield, where fresh well water runs into the scrubber, and a 10-oz. liquor is obtained at the outlet.

| Inlet. | | Outlet. | |
|---|---|---|---|
| Sulphuretted Hydrogen. | Sulphur Compounds. | Sulphuretted Hydrogen. | Sulphur Compounds. |
| 660 .. | 32·7 | 620 .. | 32·0 |
| 615 .. | 34·7 | 580 .. | 33·6 |
| 730 .. | 33·2 | 690 .. | 32·7 |
| 590 .. | 37·7 | 560 .. | 37·2 |

In the rest of the report, the author deals with the purification of gas and with the difficulties attending the removal of the sulphur compounds.

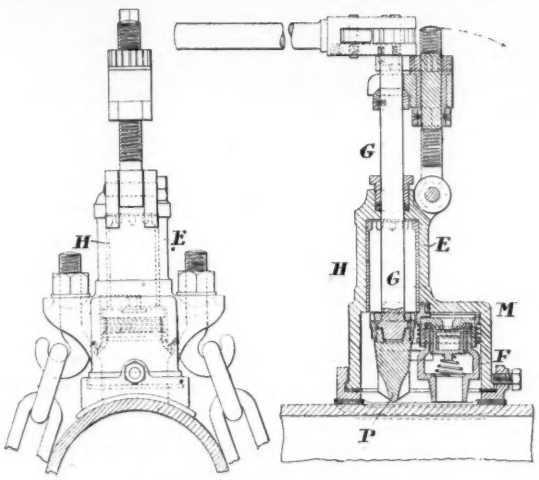
# REGISTER OF PATENTS.

## Connecting Service Pipes in Gas and Water Mains under Pressure.

DONNELLY, S. H., of Letchworth, Herts.

No. 10,335; May 12, 1908.

This apparatus, for drilling, tapping, and inserting connections for service-pipes in gas and water mains under pressure, is of the class in which the drilling and tapping operations are effected by a single combination tool mounted in a casing adapted to be attached in a gas or liquid tight manner to the mains; the casing also containing the union ferrule or branch connection for insertion in the tapped opening. The ferrule, supported in the casing out of the path of the drill during the drilling and tapping operations, requires to be subsequently moved over the drilled and tapped opening; and heretofore this operation has involved the use of a separate spindle and stuffing-box in the casing in addition to the drill spindle with its stuffing-box, thereby not only adding to the cost of construction, but increasing the points at which leakage might occur.




**Donnelly's Main Driller and Tapper.**

The apparatus, as shown, comprises an elliptical box entirely open on the base or side towards the main, to which it is clamped by bolts and chains; a saddle being interposed to suit the size of main. A cylindrical extension E is formed on the box opposite the open side, and is fitted with a stuffing-box through which the drill spindle G enters the casing. The cylindrical extension also contains a sleeve H for moving the ferrule F over the tapped opening. On the lower end of the sleeve a lug is formed, which moves in a segmental recess in the casing when the sleeve is rotated, and is pivoted to a clip arranged to fit over an adaptor cap M, which is screwed temporarily on the top of the ferrule. The adaptor caps are made of the same diameter externally, but vary internally to fit different drills and ferrules. To facilitate the movement of the ferrule, the clip is supported on straight guide-strips in the casing, arranged to engage under the lower edge of the clip.

In order to ensure the easy sliding of the clip, and to compensate for wear, the outside diameter of the clip is reduced as shown, and a gun-metal spring and loose collar are placed on the reduced part—the loose collar resting on the guide-strip. This arrangement, besides facilitating easy working, saves in fitting.

In the top of the adaptor cap, a slot or opening O is made to fit or engage the end of the drill, which is pushed into the opening. The combined drill and tap P, with its square socket to receive the end of the drill spindle, is connected to the drill spindle by a union nut engaging a collar on the spindle. The nut is provided with a left-hand thread to prevent the possibility of disengagement in working. Teeth on the union nut engage corresponding teeth on the sleeve H when the spindle is drawn up after drilling and tapping the opening; marks on the spindle showing outside the stuffing-box when the teeth are engaged. By turning the spindle through a quarter-of-a-revolution, the sleeve, which turns with it, moves the ferrule F into position for screwing into the main.

The ferrule has a straight full-way, and is provided with a valve having a cylindrical extension or guide with openings cut in it for the passage of the gas or fluid when the valve is opened. A spring keeps the valve closed against a screwed-in seating while the joint is being made. It may either take the form shown, or be made of smaller diameter and supported by a bracket or projection inside the ferrule.

When the joint is completed, the valve is opened by the extension on the union tail-piece; a rubber ring being inserted between the tail-piece extension and the valve extension to prevent leakage while the connection is being made.

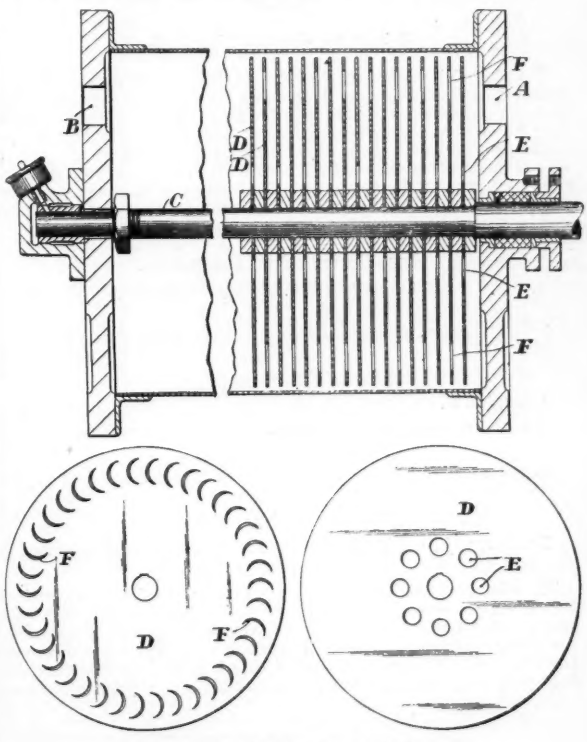
## Freeing Gas from Tar or Dust and Cooling the Gas.

BURSTALL, F. W., of Edgbaston, Birmingham.

No. 10,901; May 20, 1908.

This invention relates to apparatus for washing and cooling gas of the kind in which a series of perforated revolvable plates or discs are arranged upon a shaft within a stationary drum or container through which the gas to be treated passes from end to end—the drum providing one large interior compartment only, and containing water which, by the centrifugal action of the plates or discs, always makes a water-seal between the peripheries of the plates or discs and the bore of the container, demanding that the gas must in some way pass through them.

The patentee remarks that the arrangement he suggests is distinguished by the series of plates or discs being alternately pierced near the centre and near the circumference only, and not at any other parts. Thus the gas to be treated must, in passing through the plates or discs, take a circuitous course—first from near the circumference to the centre, and then from the centre to near the circumference again, and so on. This compels the gas to come into contact with a relatively large area of plate or disc surface which is between the piercings, and which is continually washed with constantly changing water. The arrangement of piercings sets up an action which compels the gas to be carried well down into the container and right through the body water, although the inlet and outlet are at the top of the container at opposite ends as ordinarily. He claims that his arrangement provides more efficient washing and cooling of the gas than any previously proposed arrangement of the kind—mainly for the reason that, without creating any back-pressure at the inlet, there is sufficient resistance of the too-free passage of the gas through the apparatus to compel it to remain in the apparatus until it is most effectually washed and cooled. He points out that an apparatus of a somewhat similar kind has been hitherto proposed in which a number of circular plates are made to rotate with the shaft, with a corresponding number of intervening plates fixed stationary with the cylinder or drum, in which case the stationary plates were pierced at the centre and the revolvable plates near the circumference—the gas having therefore to take a circuitous course in passing through the plates. But the action of the apparatus, according to the present invention, is distinctly different from the earlier apparatus, for the reason that there are no stationary plates whatever in the drum or upon the shaft, but all are revolvable plates or discs. Thus every piercing in the discs is "a movable piercing flying round at a high rate of speed, and through which the gas must make its way in passing through the apparatus to thereby give a distinctly different result in the washing and cooling operation."




**Burstall's Gas Washer and Cooler.**

The illustration shows a longitudinal vertical section and two of the plates or discs separate.

The drum or water container is closed both longitudinally and transversely, except at the gas-inlet A and the gas-outlet B in the ends, and as high up as convenient. The container is cylindrical. An axial shaft C extends through the container, and has water-tight end bearings. It may be driven at any required speed, and forms a mounting for a series of flat plates or discs D, extending at distances apart side by side throughout the length of the container from inlet to outlet, and alternately pierced transversely of the plates and axially of the apparatus near the centre and near the circumference. The diameter of each plate is such as to just free it from contact with the longitudinal walls of the drum or container so that it may rotate freely. Its position is such that, when the apparatus is working, a film of water closes air-tight the circumference of each plate with the walls of the casing—it being understood that the drum is, normally, a little over half-filled with water.

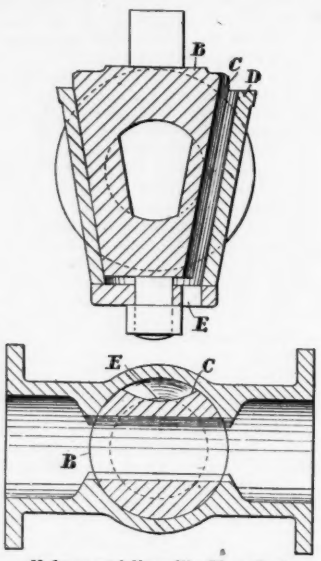
The gas on entering the apparatus flows to the centre, where the first disc is pierced, as at E, and then passes through the piercings and proceeds radially to the piercings of the next disc, which are near the circumference, as at F, and then again passes to the centre, and so on right through the whole series of discs and through the water until it reaches the outlet. During this time it becomes thoroughly washed and cooled, and leaves behind it any tar and dust in suspension, and which collects at the bottom of the drum.

## Plug Cocks for Controlling the Flow of Gases.

HOLMES, P. F., and HOWELL, H., of Huddersfield.

No. 11,272; May 25, 1908.

This invention has for its object to provide access to any portion of the body of a cock or tap for cleaning or like purposes without allowing gas (or fluid) to escape.




Holmes and Howell's Plug-Cock.

The plug B is formed as shown, with openings in the sides leaving enclosed spaces open top or bottom, or both, but not communicating with the ordinary passage through the plug. Such opening or recess may be of a curved or concave form; and where only one of such openings is provided, the inside of the body of the cock on the opposite side of the plug may be rendered accessible by turning the plug to the extent of (say) half-a-revolution. The recess at C forms a passage from D to E, into or through which a brush or other cleaning device can be passed.

## Gas-Generating Furnaces.

BOLZ, CHRISTIAN, of Budapest, Hungary.

No. 14,604; July 9, 1908.

A full illustrated abstract of this specification appears on p. 369.

## Manufacturing Gas.

LAKE, W. E.; a communication from the INTERNATIONAL GAS DEVELOPMENT COMPANY, of Manhattan, New York.

No. 16,614; Aug. 6, 1908.

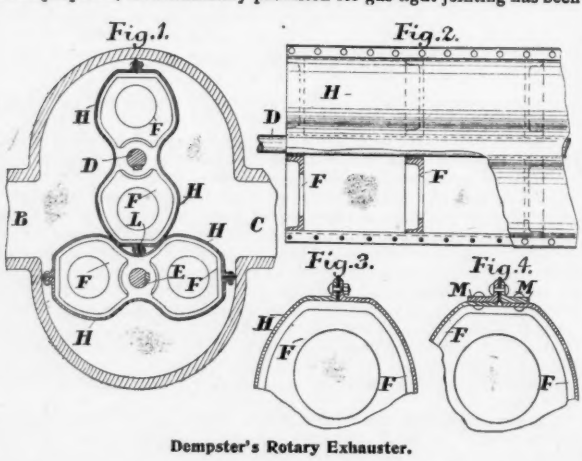
Some particulars of this invention appear elsewhere to-day, p. 372.

## Rotary Exhausters.

DEMPSTER, J., and R. & J. DEMPSTER, LIMITED, of Manchester.

No. 3985; Feb. 18, 1909.

These improvements relate to rotary blowers or exhausters—such as Roots' blowers—which rotate in contact or juxtaposition with each other, within a cylinder or chamber having inlet and outlet passages for the gas to be forced through. Such apparatus has for the most part been "formed of masses of cast metal, or, where built-up revolvers have been proposed, no satisfactory provision for gas-tight jointing has been




Dempster's Rotary Exhauster.

made—sufficient space being usually left between the inner surface of the drum or chamber and the extremities of the revolvers, and between the revolvers themselves, to permit of free rotation." These spaces, the patentees point out, maintain a certain amount of communication between the inlet and outlet passages, and, as a consequence, the amount of gas transferred during one revolution of the revolvers is less than if a tight joint were obtained, and the effect of any back-pressure further reduces the efficiency. In addition, with cast-metal revolvers, the weight of the apparatus is disproportionately great; and it is difficult to ensure a satisfactory balancing of the material on either side of the driving shaft, in each case, in order that the revolvers may rotate steadily. They therefore propose to provide means to overcome these defects.

Fig. 1 is a cross sectional view of a blower fitted with the improved revolvers. Fig. 2 is a longitudinal sectional elevation of part of one such revolver. Figs. 3 and 4 are details.

The chamber shown has an inlet passage B and an outlet passage C. The shafts D E, mounted in the sides of the casing, have secured to them revolvers constructed of a framework and outer covering, and operate in the following manner: Referring to the upper revolver, it will be seen that the shaft D has attached to it a number of diaphragms F for the reception of the outer casing H. This covering consists of rolled sheet or plate metal (by preference, pressed or otherwise formed to the contour of the diaphragms), over which the plates are mounted so as to complete the revolver. Parts of the diaphragms and covering are shown enlarged in figs. 3 and 4.

According to figs. 1 to 3, the plates H are turned up at two opposite edges, so as to present flanges; and when the halves of the covering are brought together over the diaphragms, they may be bolted or riveted together through these flanges. Between these abutting flanges are strips of leather, or other suitable packing material capable of effecting a tight joint between the revolver and the outer casing. As a modification, in lieu of turning up the edges of the plates H, the flanges may be provided by means of angle irons M (fig. 4) secured to the edges of the plates.

### APPLICATIONS FOR LETTERS PATENT.

9819.—HELPS, G., "Gas-valves." April 26.
9824.—M'TAGGART, W., "Jointing of pipes and tubes." April 26.
9832.—POTTER, W. G., "Incandescent burners." April 26.
9866.—DEZENDORF, R. L., "Gas-meters." April 26.
9889.—COWAN, T. W., "Inverted lamps." April 26.
9901.—WILLIAMS, H. W., "Gas production." April 26.
9928.—HOWELL, W., "Coin-operated meters." April 27.
9933.—BRUCE, A., "Gas ironing-machines." April 27.
9954.—DORAN, R. L., "Gas generators and lamps." April 27.
9976.—KENT, W. G, and HODGSON, J. L., "Fluid meters." April 27.
10,000.—CHANDLER, S. & J., and HERSEY, S., "Burners and mantles." April 27.
10,040.—MITCHELSON, A. E., "Converting a lighting lamp into a heating apparatus without diminishing its lighting power." April 28.
10,062.—COMPAGNIE POUR LA FABRICATION DES COMPTEURS ET MATERIEL D'USINES A GAZ, "Recording mechanism for meters." April 28.
10,141.—YOUNG, A., and R. LAIDLAW AND SON (EDINBURGH), LTD., "Money-boxes of prepayment meters." April 29.
10,177.—SUGG, W., AND CO., LTD., and SUGG-WRIGHT, E., "Inverted burners." April 29.
10,215.—RAMASSOT, M., "Automatic temperature regulators for gas-heaters." April 29.
10,230.—BONE, W. A., and WHEELER, R. V., "Grates of gas-producer furnaces." April 30.
10,257.—MORGAN, R. T., and DISHER, R. E., "Production of gas." April 30.
10,262.—MARZ, J., and SMITH, A., "Gas-stoves and the like." April 30.
10,295.—ROBIN, J. I., "Packing of mantles." April 30.
10,309.—HEATON, C., "Incandescent burners." April 30.
10,314.—WARWICK MACHINERY COMPANY (1908), LTD., "Meters for measuring the flow of fluids." A communication from the General Electric Company, United States. April 30.
10,358.—RALLS, J. C., "Locking gas or other cocks." May 1.
10,364.—HUTCHINS, S., "Gas plants." May 1.
10,376.—HALL, F. H., "Mantles." May 1.
10,400.—BÖHM, C. R., "Incandescent bodies for gas." May 1.

#### RESTORATION OF LAPSED PATENT.

Notice is given that MARY PHELAN MALLOL has made application for the restoration of the patent granted to JAMES MALLOL for "Improvements in incandescent gas-burners," No. 19,776 of 1900, and bearing date Nov. 3, 1900, which expired on Nov. 3, 1908, owing to the non-payment of the prescribed renewal fee.

# LEGAL INTELLIGENCE.

## PROCEEDINGS IN RESPECT OF PATENTS.

We give below particulars of recent proceedings in respect of two patents for matters in which our readers are interested.

### Tar for Road Spraying.

The Solicitor-General (Sir Samuel T. Evans, K.C.) has just given his decision in the matter of an opposition to the granting of a patent to Mr. William Blakeley, of the firm of Messrs. Firth Blakeley, Sons, and Co., Limited, Gas and General Engineers, of Thornhill, near Dewsbury, for an invention relating to tar-spraying machines, which are used for the purpose of preventing dust arising from the roads during the summer months, and also for their repair. The essential feature of the invention consists, as shown by the abstract of the specification given last week (p. 306), in the employment of a series of injectors for spraying the tar, by means of which it is drawn from the tank, and the intimate contact of the air with the tar as ejected forms a fine spray; the tar being expelled with sufficient force to make it penetrate into the material below the surface of the road—thus giving a lasting surface. The granting of the patent, which was taken out in

1907 (No. 4564), was opposed by Mr. Thomas Aitken, of Cupar-Fife, on the ground that Mr. Blakeley's invention had previously been covered by the opponent's prior patent (No. 26,148 of 1904). The hearing of the case before the Acting Comptroller of Patents took place last January, when the opposition was dismissed, and the patent was ordered to be sealed without any amendment of the original specification and claims. The opponent then appealed to the Law Officer; and the matter has lately been heard by the Solicitor-General. Mr. A. J. Walter, K.C., and Mr. Sinclair appeared for the appellant; Mr. H. Fletcher Moulton (instructed by Messrs. Tasker and Crossley, of Halifax) representing the respondent. The Solicitor-General dismissed the appeal with costs, and ordered the patent to be sealed, as previously directed by the Comptroller-General.

### Gas-Retorts and Fire-Clay Goods.

The Comptroller-General of Patents has given his decision upon the application made by Messrs. William Hammond, Limited, manufacturers of fire-clay gas-retorts and general fire-clay goods, of Macclesfield, under section 27 of the Patents and Designs Act, 1907, for the revocation of the patent No. 4391 of 1904, on the ground that the patented process is carried on exclusively or mainly outside the United Kingdom. The patent was granted to Dr. Emil Weber, of Schwepnitz, Saxony, for "improvements in the preparation of clay for the casting of clay ware."

In the course of his decision, the Comptroller-General says: "It is admitted that what is called the 'patented process' is in use in 14 or 15 factories in Germany and Austria, two in Sweden, one in Belgium, and one in America; and that it is not in any way used or carried on in this country. It is clear therefore that the process is carried on exclusively abroad, and that there is no adequate manufacture here at all. The patentee is therefore confined to resisting the application on the ground that he can give satisfactory reasons why the process is not carried on to an adequate extent in the United Kingdom." The reasons given were that the patentee had made repeated and *bonâ fide* efforts to sell or license the patented process in this country; that he had treated this country fairly, and had not given any preference to Germany or other foreign countries; that the failure to work here was not due to want of effort on his part, but to the "conservatism of English manufacturers," and that he had, in fact, now entered into a *bonâ fide* contract giving an option to purchase the patent rights for England.

The Comptroller states that he is not wholly satisfied with the evidence adduced in support of these allegations; and that, in the circumstances, he has decided to revoke the the patent—not forthwith, but on Dec. 31, 1909, unless in the meantime it is shown to his satisfaction that the patented process is carried on to an adequate extent in the United Kingdom. He adds that he thinks, from the evidence put before him, that there was a *bonâ fide* mistake in the way in which the patent rights were offered to purchasers in this country. In his opinion, however, the patentee is deserving of consideration, in view of the efforts he has made. Taking into account all the circumstances of the case, he did not give costs to either side.

# CORRESPONDENCE.

*[We are not responsible for opinions expressed by Correspondents.]*

### Calorific Power of Tottenham Gas.

SIR,—I hereby enclose figures relative to the above, as promised in my letter in last Tuesday's "JOURNAL."

| — | Tests at Works. | | | Mr. Brown's Tests (same day). | |
|---|---|---|---|---|---|
| | Illum. Power by No. 2 Metro. Burner. | Calorific Value by Junkers Calorimeter. | | Illum. Power by No. 2 Metro. Burner. | Cal. Value by Junkers Calorimeter. |
| | Candles. | Gross. | Net. | Candles. | Net. |
| 1st quarter, 1908 . . | 15·45 | 550 | 496 | 15·53 | 488 |
| 2nd ,, ,, . . | 15·80 | 557 | 504 | 15·28 | 490 |
| 3rd ,, ,, . . | 16·38 | 541 | 489 | 15·42 | 487 |
| 4th ,, ,, . . | 15·54 | 534 | 481 | 15·62 | 490 |
| 1st ,, 1909 . . | 15·35 | 530 | 479 | 15·18 | 485 |

The tests taken at the works are average values during the whole day. The comparative figures for the winter quarters are somewhat vitiated, as the constantly increasing output (amounting in some instances to as much as 25 per cent. in a single day) necessitates a large amount of stand-by plant, which, however carefully regulated, cannot be suddenly brought into operation without altering to some extent the quality of the gas supplied. The gross calorific values are included for the sake of comparison.

GODFREY WARBURTON, Chief Chemist.

*The Laboratory, Gas-Works, Tottenham, May 8, 1909.*

### The Dessau Vertical Retort Patent.

SIR,—The Dessau Vertical Retort Company have seen fit to strongly go into print again; and as you have afforded them room in your esteemed paper, I hope you will allow me to correct their misleading statements.

The Dessau patent (D.R.P., 167,367) has reference to "procedure of gas-making in vertical retorts, which are heated at a temperature above the usual in gas making—viz., 1300° to 1500°; and while evading the formation of tar separating in a downward direction, are in their free space completely filled with coal."

This is the patent claim against which I have gone, and tried to get it cancelled, because of "nothing new" in the invention.

As a matter of fact, I have been successful in proving that there is nothing new in the following three claims of the Dessau patent:—

*a* The filling of the entire space of the retorts.
*b* Evading a free space in the lowest part of same.
*c* Heating the retorts at 1300° to 1500°.

The Reichsgericht, however, have taken this standpoint, that the "combination" of the above three points make the patent, and that I failed to prove that the combination, as such, was known.

However, the Court proceedings have shown that the inventor in his description of the working of the patent has been entirely wrong. No weight has been attached to this fact by the Court, who took the standpoint that it was of no consequence whether the inventor had a correct imagination of proceedings, but that the only point of importance was whether his adopted ways and means showed, in the end, the desired and pretended end-effect.

Now it is clear that the value of a "combination patent" will always be doubtful. If, in a competitive design, only one of the elements of claim is not also shown to be in use, then there is no transgression of patent. I do not think, therefore, that the claimants will greatly enjoy their victory. To this may be added the fact that vertical retorts have, in the meantime, been far excelled by the chamber furnaces which are in every way more advantageous. Certain it is that my firm would, for this last reason, not now fight the Dessau patent.

In respect to the costs of this patent law suit, which are mentioned in the last "JOURNAL," there is a frivolous exaggeration apparent. Dessau, having been represented by a renowned lawyer and patent agent, must know that in patent law suits for obtaining cancellation, besides a charge of M 50 (say £2 10s.) there are no other Court charges. Both parties having arranged costs with their lawyers beforehand, the "value of object" is quite indifferent in this respect. All expenses of the suit will amount to M 4000 to M 5000 or (say) £200 to £250 all told —instead of the £5000 alleged by the Dessau Company in their communication to you.

AUG. KLÖNNE,

*Dortmund, May 8, 1909.*

# PARLIAMENTARY INTELLIGENCE.

## HOUSE OF LORDS.

The following further progress has been made with Bills:—

Bills presented, read the first time, and referred to the Examiners: Gas Orders Confirmation Bills (Nos. 1 and 2), relating to Bideford, Brough, Elloughton, and District, Bude, Comber, Compstall, Hayfield, Langley Mill and Heanor, Long Eaton, Settle, and Sutton and Hooton District; Gas and Water Orders Confirmation Bill, relating to Coatbridge, Llynvi Valley, Bradfield, Gravesend and Milton, and Hungerford.

Bills read a second time and committed: Mountain Ash Urban District Council Bill, Northallerton Water Bill, Swinton and Mexborough Gas Board Bill.

Bills reported, with amendments: Conway Gas Bill, Leyland and Farington Gas Bill, Littlehampton Gas Bill, Pontypool Gas and Water Bill.

## HOUSE OF COMMONS.

The following further progress has been made with Bills:—

Bill presented, read the first time, and referred to the Examiners: Local Government Provisional Order (Gas) Bill, to confirm Orders relating to Ilkeston and Ynyscynhaiarn.

Bills reported with amendments: Ammanford Gas Bill; Llanelly Water Bill.

Bill read the third time and passed: Yorktown and Blackwater Gas (Electric Lighting, &c.) Bill.

The consideration of the Gaslight and Coke Company Bill, which had been deferred owing to the opposition of Mr. W. Thorne, was last Tuesday again put off till Thursday, when the objection was renewed. The Bill has now been ordered by the Chairman of Ways and Means to be considered next Thursday, at a quarter-past eight o'clock.

On Wednesday, Mr. B. S. Straus asked the Home Secretary whether his attention had been called to the remark made by the Coroner for Southwark, at the recent inquest on a child whose clothes had been set on fire by a gas-grill, that such a case was not contemplated by the framers of the Children Act; and whether he would consider the propriety of amending the law in order to secure that all fires are properly guarded. In reply, Mr. Gladstone said the Coroner had reported to him that in the case referred to the child had climbed upon a chair to reach a bag hanging on the wall over a gas-grill stove, with the result that her clothes caught fire. He added that it was impossible to provide by Act of Parliament against every source of danger. The provision in the Children Act was intended to meet the common cases of open fire-grates; but he was afraid that it would be impossible to prevent accidents in such exceptional circumstances as those in the case referred to.

**New Purifiers for the Teignmouth Gas-Works.**—At the meeting of the Teignmouth Urban District Council last Tuesday, the specification and general conditions for the erection of purifiers at the gas-works were approved, and the Manager (Mr. J. A. Gray) was instructed to invite tenders for carrying out the work, subject to the sanction of the Local Government Board being obtained for the necessary loan, amounting to £1200, for which it was decided to make application.

## SALFORD GAS BILL.

### House of Lords Committee—Monday, May 3.

(*Before Lord* DONOUGHMORE, *Chairman, Lord* MONK BRETTON, *Viscount* HILL, *Earl* MORLEY, *and Lord* HINDLIP.)

The consideration of the above Bill—the opening proceedings in which were reported in the last issue of the "JOURNAL," p. 311—was resumed this morning.

Mr. BALFOUR BROWNE, K.C., the Hon. J. D. FITZGERALD, K.C., and Mr. ROE RYCROFT appeared for the promoters. The petitioners against the Bill included the Eccles Corporation, represented by Mr. RAM, K.C., and Mr. E. TYLDESLEY JONES; the Salford Board of Guardians, by Mr. MACMORRAN, K.C., and Mr. H. DAVEY; the Swinton and Pendlebury Urban District Council, by Mr. HONORATUS LLOYD, K.C., and Mr. VESEY KNOX, K.C.; the Barton Rural District Council, by Mr. R. S. CLEASE; and the Worsley Urban District Council, by Mr. C. C. HUTCHINSON.

Mr. FITZGERALD intimated that he did not propose to call any further evidence on behalf of the promoters.

Mr. VESEY KNOX, on behalf of the Swinton and Pendlebury Urban District Council, called

Mr. *William Cash* (Messrs. Cash, Stone, and Co.), who said he had considered the Bill so far as it related to the gas undertaking, and had examined the published accounts of the Corporation for the five years ending March, 1908. He had also referred to the Board of Trade returns and "Field's Analysis." He laid before the Committee a statement showing the receipts and expenditure on the undertaking, the quantity of gas sold, and the price charged. The total number of customers in 1908 was 66,514. The outstanding loans amounted to £562,006, and the capital expenditure to £876,821. He deducted from the outstanding loans the capitalized value of the annuity fund (£63,250) because he contended that the loan had long since been paid off. If there had been no transfer from the old Corporation to the new, this amount would have been long since paid off, and there would have been a larger balance available for distribution. He estimated that, roughly speaking, the Corporation were making a profit of 12 per cent. on the gas undertaking. During the past twelve years, the amount paid in relief of the rates of Salford was £320,000. Asked if he could tell what the effect would be if the petitioners were given the powers they asked for in the Bill, witness said they were seeking to limit the profits to the amount required to pay interest on the sinking fund, with a margin of 1 per cent. His view was that the Corporation of Salford had not actually found any capital at all for the undertaking. What they had done was to pledge their credit to raise loans on the security of the gas undertaking with other contingent securities. They were not in the same position as a company. The Corporation had to manage the undertaking for the benefit of the consumers, and had to bear any loss that might accrue. They were therefore entitled to a profit over and above the capital charge in respect to the sinking fund; but inasmuch as the people outside were contributing to the sinking fund, they ought to share in the profits after the claims of Salford had been satisfied. The amount of the sinking fund was prescribed by Act of Parliament. It had to be met out of the profits of the gas undertaking. If consumers contributed to the sinking fund, they should be credited with the repayment of the loans paid off out of it. He considered that 1 per cent. of the profits was a reasonable amount to carry to the relief of the rates. The £30,000 which was last year carried to the relief of the rates ought to have gone to a reduction in the price of gas, both within and outside the borough. This would be an advantage to the consumers in Salford as well as those outside. They would share the advantage equally.

Mr. FITZGERALD: I understand you to suggest that the Corporation should make no profit at all over and above the amount required for the sinking fund. You know that this was the point raised by the outside districts in 1897?

*Witness:* I believe that was so.

In 1897 they said they were paying a higher rate for gas than the consumers in Salford. Swinton were paying 2d. per 1000 cubic feet more, and Worsley were paying 4d. or 5d. more?—I take it from you that was so.

That raised the question whether there ought to be a limitation of profit just as you are raising it now?—I do not know that.

And thereupon a compromise was come to. It was agreed that, so far as Eccles and Swinton were concerned, they should in future be charged the same rate for gas as the consumers in Salford. As far as Worsley was concerned, they were only to be charged 2d. more than the consumers in Salford. In consideration of getting this advantage, they gave up their claim to any limitation of the profits. They have enjoyed the advantage of the abolition of the differential rate ever since?—Yes.

It represents something over £3000 a year?—It may do.

So that, while they have been getting this sum of money every year, they now propose to retain this advantage, and at the same time to deprive the Corporation of the right of making any profit at all?—No, what they are saying is that they are to-day within the area of supply of this authority, which has been set up for the benefit of the consumers in both districts.

So they were in 1897 and had been for twenty or thirty years before?—Very likely. I do not know what the Salford Corporation were doing in 1897.

Replying to further questions, witness said he was aware that differential rates for outside districts were frequently made both by companies and local authorities. In the case of the Croydon Gas Company, there was a differential rate of 4d. in Caterham. At Bournemouth, there was a differential rate for Poole. Both at Croydon and Bournemouth the differential rate was being reduced, and would gradually disappear. He had treated the annuity fund as an amount carried to the relief of the rates. It was applied in respect to a capital expenditure of £50,000, all of which has been paid off. He contended that Salford had carried to the depreciation fund more than was required. In his opinion, £250,000 was an excessive sum for the extensions proposed under the Bill.

Re-examined by Mr. VESEY KNOX, witness said he had nothing to do with the Act of 1897. There was no discussion before any Committee, and there was no record of any agreement except what was shown on the face of the Act of Parliament.

Mr. *E. H. Stevenson* said he had made himself familiar with the district supplied by the Salford Corporation. So far as he was able to form an opinion, the existing works were ample; and there was no necessity for enlargement. He was not allowed to inspect the works; but so far as he could gather, no new works were wanted. Certainly he did not think it was advisable to spend £63,000 in the purchase of the proposed site. Asked what he thought about the claim of the petitioners to limit the profits of the Salford Corporation, witness said the arrangement in 1897 bore on the face of it an understanding that the people in Eccles and Swinton and those in Salford were to pay the same price for their gas. But while the letter of the law appeared to have been carried out, the spirit was not, because the amount paid to the relief of the rates of Salford equalled 6d. per 1000 feet on the gas sold in the town. Therefore, although the Salford people paid the same price, they were, in fact, getting it 6d. per 1000 feet cheaper than the people in the outside districts, because they did not have to pay so much in rates. Asked as to the extent to which, under the provisions of the Bill, the illuminating power as fixed in 1897 would be altered, witness said five candles. He thought there was a difference of two candles between the present Salford test-burner and the one proposed to be used for testing. It was admitted that this would save a good deal in the cost of manufacture. A saving would be effected by giving up the use of cannel, which cost 2s. a ton more than coal. About 40 per cent. of cannel was used at present. The coke, owing to the discontinuance of the use of cannel, would be increased in value by about 4d. a ton. It was admitted that 1500 cubic feet more gas would be made out of a ton of coal than at present. This alone meant, at the present average price, a saving of 3s. 4½d. This, with the saving on cannel and the improved price of coke, would mean a saving of 4s. 6d. per ton; and if there were 12,000 feet of gas made from a ton of coal, the saving would be 4½d. per 1000 feet. If the Committee were satisfied with the undertaking of the promoters, that the whole of the consumers should have the benefit of the reduced cost of manufacture, he thought the petitioners ought to have the right to inspect the books of the Corporation. In the event of any difference arising, the matter should be referred to an arbitrator appointed by the Local Government Board. Parliament should insert a provision to take the place of the sliding-scale—the amount to be applied to the relief of rates varying according to the price charged for gas. This would be an inducement to the Local Authority to reduce the price of gas. There were cases in which this result had been achieved by limiting, sometimes prohibiting, profit on the undertaking. When the Scotch Act of 1873 was passed, there were hardly any statutory companies in Scotland. The Act gave local authorities the right to buy up any non-statutory companies, but prohibited them using the profits in aid of the rates. In Edinburgh and Glasgow, where a reduction had been made in the illuminating power, the benefit had been given to the consumer, under similar legislation. There was also the case of Glastonbury, where the profits were limited to 1 per cent. on the capital for the time being of the gas undertaking. Under such a system as this, the consumer would be sure of getting gas at a fair price after a reasonable return was made on the undertaking. Salford could not make gas as cheaply as at present if they were confined to their own borough. As to the effect of the change in the illuminating power, he thought the consumers would be put to a good deal of expense. If they wanted the same light as they were now obtaining from a flat-flame burner, consuming 3½ feet of gas per hour, they would have to burn at least 5 feet per hour. He thought in making a change in the illuminating power, the consumers ought to be provided with new burners, as was done in the case of the London Gas Companies.

Mr. FITZGERALD: We have agreed to do so.

*Witness:* It is not in the Bill?

Mr. FITZGERALD: No.

Mr. VESEY KNOX: It is said that Swinton has had the advantage in recent years of having its price reduced to that of Salford?

*Witness:* As a matter of fact, the price at Salford is lower than at Swinton, because during the last five years, roughly speaking, £2000 a year has been taken out of Swinton for the reduction of the rates in Salford.

Mr. FITZGERALD: Is it a fact that when a reduction in candle power is given, it has been usually followed by a reduction in price?

*Witness:* Yes; generally speaking a reduction in price follows.

Plymouth reduced the candle power from 15 to 14, with no reduction in price?—There the price of gas is awfully low. The reduction of candle power would not really lead to a reduction in cost worth mentioning.

Replying to further questions, witness admitted that it was nearly always the ordinary practice in England, in large towns, where the corporation owned the gas undertaking, for the authority to be allowed to carry the profits to the relief of the rates. This did not, however, make it any better for the gas consumer. Parliament should do in this case what they had done in other instances where there had been a similar position—for instance, Glastonbury and Stalybridge. He considered that the Corporation of Salford were carrying too much to the relief of the rates. He did not think it was right to hide up the amount paid in rates by taking money out of gas and water undertakings. Consumers ought to get gas from the local authority at cost price.

Mr. HONORATUS LLOYD said that was all the evidence he proposed submitting on behalf of Swinton and Pendlebury. He was a little astonished to hear Mr. Balfour Browne, in opening his case, suggest that these local authorities were guilty of a breach of faith in opposing the Bill. There had been no attempt to substantiate the charge; and he hoped their Lordships would agree that it was entirely without foundation. The Corporation were in the position of a company coming to Parliament for additional capital; and this was the proper time to consider whether the conditions could not be revised for the benefit of the consumer. In 1891, the Salford Corporation came for a Provisional

Order to authorize the raising of further capital for the gas undertaking. They were at the end of their tether; and Swinton and Eccles succeeded in getting a purchase clause inserted. The following year, Swinton, in conjunction with Eccles, promoted a Bill to carry out the terms of the purchase clause. Unfortunately, the House of Commons struck out Eccles; and when the Bill came to the House of Lords, the Corporation said: "All we agreed to was not to oppose the Bill for the purchase of the whole; but as the other House cut out your partner you cannot purchase the whole, and we are entitled to oppose." Swinton lost their Bill because the first House struck out their partner, and the second House said "you cannot have your Bill because you have no partner." In 1897, the differential rate was abolished, and the standard illuminating power was fixed at 17 candles for the Swinton and Eccles district. This, Mr. Balfour Browne said, was a statutory obligation. "How dare you," he asked, "come here and complain! It is a gross breach of faith." Because in 1897 the representatives of these districts made a certain compromise with the Corporation, was it to be said that they were for ever in a position of servitude to the Salford Corporation who were to go on charging whatever price they chose up to their ridiculously inflated maximum of 5s.? The suggestion was so monstrous that he could hardly understand how it could be made. There had been no breach of faith. Every municipality which desired to carry on such a business as this must do so for the benefit of the consumer and not for the benefit of the ratepayers at the expense of their neighbours. The promoters of the Bill must elect whether they were to be treated as a company or as a municipal corporation—they could not be a corporation one moment and a company another. At the present time, the outside districts he represented were not only buying the gas-works by paying off the capital charges, but were contributing something like £2000 a year towards the rates of Salford. He asked the Committee to say that all they should be asked to pay was a fine which was sufficient to cover the cost of manufacture, to pay a fair share of the interest on the capital outstanding for the time being, and a fair share towards the sinking fund. Up to the present, they had been paying capital charges in respect of all the original capital. What he contended they were entitled to charge was ½ per cent. interest on the sinking fund in respect of capital outstanding and 1 per cent. on the outstanding capital to cover "brains and risk." One per cent. was a perfectly fair sum to cover the risk. Where was the risk? These corporations did not step in until all the risk was over. It might be said if Swinton was not content with their position they could go out of the area. That was exactly what they could not do. When they attempted to get out, the Corporation opposed their Bill and kept them in. He did not know now whether his learned friend, Mr. Fitzgerald, would say "purchase."

Mr. FITZGERALD: Are you asking me a question?

Mr. HONORATUS LLOYD: I was wondering.

Mr. FITZGERALD: I do not know that any question arises.

Mr. HONORATUS LLOYD: If he had said "purchase," I should have known what course to take; but he does not suggest it.

Mr. FITZGERALD: It is not for me to suggest.

Mr. HONORATUS LLOYD: Then I take it my learned friend is not anxious that I should purchase that part of the undertaking?

Mr. FITZGERALD: I have no instructions at all on the point.

Mr. HONORATUS LLOYD: I think it is quite obvious that the Corporation do not desire us to purchase. With regard to the capital, I am going to ask that reasonable provision should be made that such capital as is necessary shall be raised, as and when required, with the consent of the Local Government Board.

Mr. C. C. HUTCHINSON, on behalf of Worsley District Council, then called

Mr. *Isaac Carr*, M Inst.C.E., the Engineer of the Widnes Corporation Gas-Works. He said the proposed reduction of the illuminating power of the Salford gas was undesirable in the interests of the consumers, more especially those who used flat-flame burners. The reduction of the power would diminish the cost of production. He agreed that the use of 40 per cent. of cannel was not the most prudent method of manufacture. There would be considerable saving by substituting ordinary coal for cannel. In his experience, there was not another gas-works in Lancashire which pursued this extravagant course in regard to the use of cannel in the same proportion. Asked as to the fairness of comparing Widnes with Salford, witness said he did not think Widnes had any special advantage over other towns in Lancashire and Yorkshire. The prices charged by Widnes, within the borough, were 1s. 2d. per 1000 cubic feet for lighting and domestic uses, and 10d. for power. The gas was obtained from Yorkshire and Lancashire coal. The quality of the gas would be 18 candles tested by the "Salford" burner. So that, in effect, it was the same gas, as regards illuminating power, as the Corporation of Salford were supplying now. He had never made any proposal to reduce the power. The Corporation of Widnes set aside a sum equal to 1½d. per 1000 cubic feet towards the relief of the rates. He had made a considerable number of experiments to test the effect of different burners; and he came to the conclusion that to substitute a No. 2 "Metropolitan" for the present "Salford" burner would operate against the consumers to the extent of 9⅝d. per 1000 cubic feet in regard to the flat-flame burner, 5½d. in regard to incandescent burners, and 7½d. in gas used for heating purposes.

## Tuesday, May 4.

On the resumption of the proceedings to-day,

Mr. *Isaac Carr* continued his evidence in support of the Worsley petition.

Mr. HUTCHINSON: You told their Lordships yesterday that the proposed change in the candle power would involve a difference of 5½d. per 1000 cubic feet to consumers using incandescent mantles?

*Witness:* Yes; and I think that is proved by an examination of the burners sold on the market. I have here two burners almost identical in external appearance; but internally there is a very marked difference. One is the South London burner for low-grade gas. The orifice for the passage of the gas is much larger than that in the burner which is made for a higher quality of gas. This supports my contention that the high-grade burner allows the passage of a small quantity of gas, and the low-grade burner a large quantity. I have made some careful experiments with these two burners; and I find that the one for low-power will pass 3·3 cubic feet of gas per hour, while the burner for high-grade gas will pass only about 2·3 feet.

In further examination, witness said he had examined the accounts of the Salford Corporation for the last five years, and had prepared tables which he placed before the Committee. These tables he contended showed that Worsley was paying about 5d. per 1000 cubic feet more for gas than Salford. Five years ago the total cost of gas at the burner of the consumer at Worsley was 1s. 11½d. In 1907, it was decreased to just over 1s. 10d. Accepting 5d. per 1000 feet as the difference between the cost of gas at Worsley and the cost at Salford, this did not justify a differential charge of 2d.

Mr. HUTCHINSON: Ought you not to deduct from the price of gas in Salford a sum per 1000 feet equivalent to the amount contributed to the rates?

*Witness:* Yes, certainly.

The total sum given in relief of rates in Salford was proved by Mr. Cash to be £29,830. Divide that by the total quantity of gas sold in Salford, it will show a diminution per 1000 cubic feet of gas sold amounting to 6·15d., which has gone to the relief of the rates. So that the actual difference between Worsley and Salford is not 2d., but a little over 8d.?—That is so.

It is said by the promoters that Worsley has no liability in respect to loss on the works?—I say that neither has Salford. Until the maximum price of 5s. is reached, Salford can always guard itself against loss by raising the price of gas to the locality. It is only when they are charging 5s. that there is any possibility of loss; and I should like to say that in my experience I do not know of any case in the kingdom where the ratepayers have been called upon to face any loss arising from the gas undertaking.

In reply to further questions, witness said he agreed with Mr. Stevenson as to the saving which would be made by a reduction in the candle power of the gas. Using the No. 2 "Metropolitan" burner at Salford would, he considered, reduce gas-testing to a farce.

Replying to Mr. RYCROFT, witness said that in Widnes the statutory standard was 14-candle power gas. The differential rate in Widnes did not vary from 10d. to 1s. 10d. per 1000 cubic feet. They charged 1s. 2d. in the borough. It was not a fact that they charged one district a differential rate of 1s. 11d. Their highest differential rate was 1s. 6d., the lowest 6d. The place where they charged 1s. 6d. was five miles from the works; and there the consumption was about ½ per cent. of the total production. The entire consumption in the outside area only amounted to 6 per cent. of the total production. They laid the mains purely as a matter of speculation. They had no guarantee, as in the case of the districts around Salford. They made this differential charge because of the distance the gas had to be taken. Asked if he knew that Salford gas had to be taken as much as seven miles, witness said if they had to take it seventy miles it would not matter if they had a remunerative district.

Mr. RYCROFT: The differential price in Worsley is 2d., as against your lowest of 6d. May I take it the gas undertaking at Salford is about five times as large as Widnes?

*Witness:* Yes; I am not here to justify differential prices in Widnes. The last four reductions that have taken place within the borough have not been extended to the outside districts. It is a matter I personally have nothing to do with. The district where we are charging 6d. extra is very near our boundary and we are making a handsome profit.

Do you agree that Salford treats the gas consumers outside the borough better than Widnes does?—No; there is no comparison between the two districts.

Do you set aside out of your gas profits £5255 a year for street lighting?—We give 1d. in the pound in relief of rates; and that is given in the form of street lighting.

The Salford Corporation charge the ratepayers for street lighting whereas you make them a present of it to the extent of about £5255 per annum; so that if you were as big as Salford, it would amount to £26,000 a year?—Yes.

Replying to further questions, witness said he regarded the reduction of the illuminating power as a great misfortune for the consumers, and he considered it was contrary to the best interests of industry. In his evidence on a parliamentary inquiry in 1900, to ascertain the fair price to be allowed to consumers for a reduction in the illuminating power in the Metropolitan area, he expressed the opinion that the value of two candles reduction to the consumer was 9d. The Company offered a reduction of 2d.; and the Committee thought 2d. was a proper amount to be allowed.

Mr. HUTCHINSON: That reduction of 2d. was imposed upon the Company by statute?

*Witness:* It was.

There is no such proposal here; it is to be left to the discretion of the Corporation?—That is so.

Is there any justification for the continuance of the differential price at Worsley?—No.

Mr. HUTCHINSON then proceeded to address the Committee on behalf of the Worsley District Council. He said they were in the same position as Swinton and Eccles, except that the consumers were charged a differential rate of 2d. He submitted there were no circumstances which justified the difference. The Corporation were in the position of a company coming for a fresh lease of life—for a further concession; and the burden fell upon them of justifying this departure from the principles of equity. The Corporation were not willing that these outside districts should go out of the area. Like the Israelites of old, they would not let the people go; they wished to keep them in bondage and servitude. It would be quite possible for these districts to obtain a supply of gas in bulk from four corporations; but Salford said "No, under no circumstances can we let you go." From an ordinary commercial point of view, he could not understand the position they had taken up. In one breath they declared they were philanthropists, supplying gas at a very small profit merely for the sake of letting them down easily, and then in the next breath they said: "Let you go! Let you supply yourselves! It would be monstrous; it would be absurd; it would be taking away our right; it would be forfeiting a valuable

privilege"—the privilege of supplying gas at cost price. (Laughter.) That was not the only question between Worsley and Salford. The differential rate for Worsley was fixed by statute at 2d.; but really the difference between Worsley and Salford was over 8d. per 1000 if they took into account the amount paid out by the gas undertaking for the relief of the Salford rates. So far as the outside districts were concerned, the Corporation were exactly in the same position as a company; and they should be brought into line with the companies. The outside districts claimed the right to be taken into partnership to some extent. The Corporation admitted that they would make a considerable saving by the change they were proposing to make, and they said to the outside districts "Oh, yes, we will give you something!" Was it right that they should be left in the position to make increased profits and allocate them between themselves and their consumers? Would this suggestion be seriously made if they came before a Parliamentary Committee as a company? Their Lordships knew it would not; and he asked for some guarantee that this pledge on the part of the Corporation would be carried out. He did not say for a moment that it would not be. But he said they were there in exactly the same position as a company; and the same sauce should be applied to the Corporation goose as would be applied to the company gander. He asked that the differential rate should be abolished, and that if these new concessions were granted to the Corporation, they should be accompanied by statutory provisions which would make the position of the outside people absolutely safe.

Mr. RAM, on behalf of the Eccles Corporation, said his case was precisely the same as that put forward by Mr. Honoratus Lloyd on behalf of Swinton and Pendlebury. They were not satisfied with the existing state of things; and they said now was the time and opportunity for revision. As to the question of a free supply of new burners, the only point he understood was as to how long the offer of the Corporation was to remain open. He submitted that two years was a proper time.

Mr. RYCROFT: We are willing to agree to two years.

Mr. CLEASE addressed the Committee on behalf of Barton, and pointed out that although the population was only one per acre, more than 3000 persons were crowded on two sides of the main road. He asked the Committee to give Barton the same protection as they gave to Worsley and Swinton.

Mr. BALFOUR BROWNE said Mr. Hutchinson made some reference to the plagues of Egypt and likened the Corporation to the Israelites who would not let the people go. As a matter of fact, when in 1891 they secured the insertion of a purchase clause, they did not even attempt to exercise their legal powers. One local authority did bring in a Bill; but it was modified in the House of Commons and rejected in the House of Lords. Subsequently, they sought to obtain a share of the profits and do away with the differential rate. A bargain was made then that there was to be no sharing of profits; but the Corporation agreed to do away with the differential rate. The Corporation had given up to them what the Committee of the House of Commons in 1895 said they need not give up; and they went away without any share of the profits. These districts now asked their Lordships to say that this bargain was of no effect. He admitted anybody had a right to come to Parliament and ask them to break a bargain; but he thought it would be a bad day for the country if Parliament lent itself to any such nefarious practice as was attempted here. As regarded these outside districts, the Corporation stood exactly in the same position as a company. If they had been a company, they would have gone on charging profits on the whole of the capital employed. There would have been no sinking fund. The company would have taken all the risk. This was the position of the Corporation to-day. They took all the risk; they had to find the money, which had all been secured on the rates. The outside districts now wanted to be partners without sharing the risk. Even if there had been no bargain, he thought their Lordships would say this was not a fair claim. The Corporation were doing everything a consumer could reasonably expect, and he asked their Lordships not to accede to the prayers of the petitioners.

The room was then cleared; and when the parties were readmitted,

The CHAIRMAN said: The Committee desire, first of all, to say that, with reference to the word bargain which has been so much used, both in the speeches and the evidence, they are satisfied that the action taken by the opponents of the Bill is perfectly proper. They do not feel that any bargain made in 1895 or any other time has been broken by their action. The Committee are prepared to agree to the insertion of a clause providing that, in charging their consumers, the Corporation should be allowed to charge a sum which would only fall under the following heads:

Firstly, a fair price.
Secondly, interest on the sinking fund on capital for the time being outstanding.
Thirdly, a share of a proper reserve fund which we accept as ½ per cent. per annum.
Fourthly, 1 per cent. on the capital outstanding.

The Committee agree that the same conditions should be placed upon the promoters as are placed upon public companies as to the limitation of the carry-over. And they think that the capital should be raised, as and when required, with the consent of the Local Government Board. The Committee think it would be fair to abolish differential rates in all the outside districts now before us, and that Barton should have a statutory right to the same rates as the other districts. The Committee think that a statutory obligation should be put on the Corporation to charge to the lighting fund the cost of public lighting; and, lastly, they think that a clause should be inserted stating that if at any time, through the discontinuance of the use of gas by the public, the gas undertaking of the Corporation becomes a total loss, and the outstanding capital of the undertaking should become chargeable on the rates of Salford, that charge should be shared by the ratepayers of the four outside districts now before the Committee, in proportion to their respective rateable value.

Mr. BALFOUR BROWNE said he would endeavour to draw up a clause to carry into effect their Lordships' decision.

Further consideration of the gas clauses was accordingly postponed.

### Wednesday, May 5.

When the proceedings were resumed this morning,

Mr. BALFOUR BROWNE said: May I call to your Lordships' mind a matter which was decided yesterday with regard to the gas clauses of the Bill. We have considered your decision very carefully, and have come to the conclusion that if we were absolutely willing—of course, we should do it even if it were against our will—we have no power to do that which you have put upon us. First of all, the Corporation are only the creatures of the ratepayers. The ratepayers have never had any such proposal as this put before them, and we believe if it had been put before them they would have rejected the Bill. May I say for myself that, after the thorough investigation that has taken place before this Committee, I shall advise the Corporation most carefully to consider the scheme which your Lordship has suggested and put it before the ratepayers. I cannot go further than that. I cannot say that the ratepayers will allow us to come to Parliament with such a Bill; but I recommend that they should do so. If I put anything in the Bill beyond our notice, under the Standing Orders, the Bill would be rejected. There is another objection. Your Lordships have put an obligation, not only upon the ratepayers of Salford, but upon the ratepayers of Eccles and Swinton, and all the other places you say in your decision. Lastly, they think that a clause should be inserted stating that if at any time, through the discontinuance of the use of gas by the public, the gas undertaking of the Corporation becomes a total loss, and the outstanding capital of the undertaking should become chargeable on the rates of Salford, that charge should be shared by the ratepayers of the four outside districts now before the Committee in proportion to their respective rateable value. This was really in the nature of a protection to us; but I am not at all certain that it can be done, because the ratepayers of these districts have never been consulted about it.

The CHAIRMAN: But surely any action Parliament may think right to take may be taken without consulting the opinion of the ratepayers of the district.

Mr. BALFOUR BROWNE: It may be so; but I think it is impossible to put such a clause in.

The CHAIRMAN: Surely it cannot be argued that it is impossible for Parliament?

Mr. BALFOUR BROWNE: Perhaps not, if they accept it. We believe that if these proposals had been put before the ratepayers of Salford, the Bill would have been rejected; and I cannot be responsible for forcing the ratepayers of Salford to do what they would not have given power to do on their behalf. There are no means of consulting the ratepayers now; and I am sorry to say the only course open to us is to withdraw the gas part of the Bill altogether. At the same time, after this inquiry, I shall recommend the Corporation to consider the matter very carefully, and see if they cannot draw up a Bill on something like the lines your Lordship has suggested and submit it to the ratepayers of Salford.

Mr. RAM: I am not sure whether I quite apprehend what my learned friend is asking.

The CHAIRMAN: Surely; he wants to drop the whole of this part of the Bill.

Mr. RAM: Then I am going to submit it is not competent for him to do so. He cannot withdraw part of a Bill without your Lordships' permission. I may point out that this is the second time this has been done by the Corporation when they have been opposed by these districts. In 1895, when a clause was put in against their wishes, they withdrew the whole of the Bill. It may be open to them to take this course now; but I do not think it is respectful to your Lordships. It is not open to my learned friend, without your Lordships' permission, to withdraw the gas clauses of the Bill; and I ask your Lordships to say that it shall not be done.

Mr. HONORATUS LLOYD: This is not the first time this has been done. We have on several occasions had the advantage of the Corporation when they have come to Parliament. We have succeeded before, as we have succeeded now; but it seems to me the Corporation of Salford desire to take this position—they say: "We will have what we want, or we will have nothing." I ask your Lordships not to allow my learned friend to say: "I will take this or that from my Bill and I will leave the rest."

The room was cleared; and when the parties were re-admitted,

The CHAIRMAN said: The Committee are not prepared at this stage to consent to the striking of the gas clauses out of the Bill.

Mr. RAM asked whether a clause had been drawn embodying the decision of the Committee.

Mr. BALFOUR BROWNE said he would endeavour to draw a clause to carry out their Lordships' decision; but he would not say that the Bill would not be rejected under the Standing Orders in the other House.

The CHAIRMAN: That is no concern of ours. I may point out that if these clauses are to be struck out, it can be done at a later stage, when we come to consider the clauses.

Mr. BALFOUR BROWNE undertook to produce a clause embodying the decision of the Committee on Thursday morning.

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### Thursday, May 6.

When the Committee sat this morning,

Mr. BALFOUR BROWNE said he had endeavoured to draft a clause to carry out their Lordships' decision; but he understood Mr. Vesey Knox desired to propose some amendments, and it might save time if the Committee allowed the matter to stand over until the afternoon.

The Committee assented; and later in the day

Mr. VESEY KNOX submitted his amendments to the promoters' clause. He proposed that the new conditions should come into operation on Sept. 29, 1909, instead of March 31, 1910, as proposed by the promoters.

Mr. RYCROFT pointed out that March 31 was the end of the Corporation's financial year; and the Committee agreed that the change should take effect from that date.

The new clauses were accepted by the Committee in the following form:

REGULATION OF THE PRICE OF GAS.

Notwithstanding anything contained in former Acts of the Corporation,

as and from the 31st day of March, 1910, all moneys received by the Corporation by way of revenue from the gas undertaking in each year shall be applied in the following manner and for the following purposes:

Firstly: In payment of the working and establishment expenses and cost of maintenance, renewal, and repair of the gas undertaking of the Corporation.

Secondly: In payment of the interest on the moneys borrowed or reborrowed for the purposes of such undertaking.

Thirdly: In providing the requisite appropriations, instalments, or sinking fund payments in respect of any moneys borrowed or reborrowed for the purposes of such undertaking.

Fourthly: In repayment to the district fund of any deficiency in the revenue of the Corporation in respect of the gas undertaking at any time hereafter made good out of that fund.

Fifthly: In providing, if the Corporation think fit, a reserve fund, by setting apart a yearly sum, not exceeding 10s. per cent. upon so much as is outstanding for the time being of the moneys borrowed or reborrowed for the purposes of such undertaking, and investing the same, and the resulting income thereof, in statutory securities, and accumulating the same at compound interest until such fund amounts to a sum equal to 10 per cent. of the moneys so outstanding, and whenever the said fund amounts to that sum the income therefrom shall be applied in the same manner as moneys received by the Corporation by way of revenue in respect of the said undertaking. Provided that if and whenever the said reserve fund shall fall below the said last-mentioned sum, the Corporation may set apart such yearly sum as aforesaid until the said reserve fund shall again amount to such last-mentioned sum.

Sixthly: In setting apart a yearly sum equal to £1 per cent. upon the amount of moneys borrowed or reborrowed in respect of the undertaking and for the time being outstanding, after deducting all sums repaid and all sums standing to the credit of any sinking fund, which sum shall be carried to the credit of the district fund of the borough. The residue of any such moneys shall be carried forward to the revenue account of such undertaking for the next succeeding year and shall whenever, and so soon as, the amount so carried over exceeds the sum required to meet the purposes secondly, thirdly, and sixthly above mentioned for one year, be applied to the reduction of the price of gas supplied by the Corporation.

Any deficiency on such undertaking in any year shall be made good in the first instance out of the reserve fund (if any) set apart in connection with such undertaking; and if there be no such reserve fund, or if any such reserve fund shall be insufficient for the purpose, then out of the district fund of the borough. But in each such case any deficiency shall be a debt due from, and shall be repaid to, the district fund or the reserve fund, as the case may be, out of any future revenue of the said undertaking.

As from March 31, 1910, any then existing depreciation fund or reserve fund of the Corporation in connection with the said undertaking shall be deemed to form part of the reserve fund which the Corporation are by this section authorized to form.

Any disputes as to the amount of moneys borrowed or reborrowed in respect of the undertaking and for the time being outstanding, after deducting all sums repaid and all sums standing to the credit of any sinking fund, shall be settled by the Local Government Board.

ABOLITION OF DIFFERENTIAL RATE.

As from March 31, 1910, the Corporation shall charge a not greater price, rent, or rate for gas supplied by them to consumers of gas, as for the purposes of public lighting within the Urban District of Worsley and the Rural District of Barton-upon-Irwell than that which they charge in respect of gas supplied by them to consumers of gas in similar circumstances or credit for the supply of gas for the purpose of public lighting within the Borough.

SUPPLY OF GAS FOR PUBLIC LIGHTING.

The Corporation shall in each year credit the revenue account of the gas undertaking with an amount for the gas consumed for public purposes calculated at the rates charged to private consumers, which amount shall be a charge upon the rates leviable for public lighting.

REPAYMENT OF LOSS BY OUTSIDE AUTHORITIES.

If at any time hereafter through discontinuance of the use of gas by the public the gas undertaking becomes a total loss and the outstanding capital of the undertaking should thus become chargeable upon the rates of the Borough, the Corporation of Eccles, the Urban District Council of Swinton and Pendlebury, the Urban District Council of Worsley, and the Rural District Council of Barton-upon-Irwell shall respectively repay to the Corporation the proportion of the moneys so chargeable which the rateable value of the borough of Eccles, the urban district of Swinton and Pendlebury, the urban district of Worsley, and the townships of Clifton and Barton Moss and that portion of the township of Davyhulme in the rural district of Barton-on-Irwell supplied with gas by the Corporation bears to the total rateable value of the borough and of the borough of Eccles and the said urban districts and portion of rural district. Provided that any payments to be made by the said Rural District Council of Barton-upon-Irwell shall be deemed to be special expenses, and for that purpose those portions of such rural district described in this section shall be deemed to be contributory places within the meaning of section 229 of the Public Health Act, 1875.

**The other clauses were adjusted, and the Bill, as amended, was ordered to be reported to the House for third reading.**

## Personating a Gas Inspector.

**At the Westminster Police Court, on Monday last week, charges of housebreaking and robberies from automatic gas-meters were brought against George Attwell, a young man, stated to have personated an inspector of the Gaslight and Coke Company. Mr. George Seevor, Solicitor for the prosecution, said the prisoner, wearing a cap with the Company's official badge on it, had perpetrated a number of audacious robberies. Evidence was given by residents in Lumley Buildings and Coleshill Buildings, Pimlico, that the prisoner called on them, stating that he came to examine and collect the money from prepayment gas-meters. Remarking that he had lost his keys, he in several instances forced the meters and took the contents. A number of the witnesses deposed that prisoner produced a book with the name of the Company upon it, and that receipts for the money taken were promised in due course. In the housebreaking cases, testimony was given that prisoner, having ascertained that people were away from their flats, called and posed as an official of the Company. In the absence of the occupiers, the flats were broken into and ransacked. When arrested, the prisoner was wearing clothing identified as stolen. Detective Steel said that accused was brought up in a reformatory, and had since been sentenced for bicycle theft. Prisoner pleaded guilty to the charges, and was committed for trial.**

## HARROGATE GAS BILL.

The Unopposed Bills Committee of the House of Commons, consisting of Mr. Alfred Emmott (Chairman), Mr. Cladwell, Mr. Phipson Beale, K.C., Mr. Hill, and Mr. Moon, K.C. (Speaker's Counsel), last Thursday, considered the Harrogate Gas Company's Bill.

The CHAIRMAN complained that the Committee had only then received the report of the Home Office on the Bill, which might lead to one of the clauses being omitted; but the matter would have to be further considered and the decision of the Committee would be given at their next sitting. For the time being, they would hear the evidence, which would obviate the witnesses having to be called again.

Mr. BROWN, on behalf of the Agents for the Bill, stated that it was proposed to supply suction gas plant; and, according to the Home Office report, they would have to come under the ordinary regulations. He, therefore, asked the Committee to qualify the clause relating to this matter by inserting provisions with respect to the quality of power gas similar to those contained in the Truro Gas Act of 1906. The main object of the Bill was to confirm the construction of a private railway siding to connect the Company's works with the North-Eastern Railway. The siding was about two miles in length, and had been constructed so as to avoid annoyance to the public in regard to the traffic on the roads. The other powers were of quite a minor character. The Company proposed to extend the area of supply by including certain parishes in the direction of Ripley, where there was at present no supply, and where gas was urgently needed.

The Chairman of the Company (called as a witness) told the Committee that they were not asking for any further capital. The present standard price was 5s. 6d.; but the price they were now charging was 2s. 8d. gross. The amount of the difference between the actual and the standard rate enabled them to pay 7 per cent. over the standard rates of dividend. They had paid 7 per cent. dividend on the capital; and this had given a high value to the Company's stock. The amount of premium capital was £51,380—very nearly a third of their whole capital was premium capital. If their sliding-scale were altered, it would interfere enormously with the capital value of the stock. They had done all they could to exploit their capital to the best advantage. Had the standard price been lower, they would not have got such a fine price on the issue of their stock, and there would have been less premium capital. From the point of view of the consumer, it did not really matter so long as he could get his gas as low as 2s. 8d. per 1000 cubic feet.

The preamble of the Bill having been formally proved, the Committee postponed their decision till their next meeting, when the matters raised on the Home Office report will be considered.

## AMMANFORD GAS BILL.

Before the same Unopposed Bills Committee as dealt with the Harrogate Gas Bill, the above-named measure was considered.

Mr. BAKER, the Agent for the Bill, explained to the Committee that they proposed to incorporate a Company for the purpose of supplying with gas a district in South Wales which was growing very rapidly in population, and was likely to still further increase. Originally, two Bills were promoted—one by the Amman Valley Company, a Company who had constructed certain gas-works in the district, and the other the Ammanford Bill, which was promoted for the purpose of purchasing the undertaking of the Amman Valley Company. The Amman Company had been formed as a Limited Liability Company, without any statutory powers. It had a very inflated capital, and was promoted under somewhat discreditable circumstances. It fell foul of the Local Authority, with the result that when it endeavoured to break up the streets, the Local Authority intervened, and the undertaking thus became derelict. The Company then promoted a Bill to obtain statutory powers; but owing to circumstances at which he had hinted, the Company were not in a position to go on. Their Bill was withdrawn, and the Bill of the Ammanford Company proceeded, under which the undertaking of the Amman Valley Company was to be taken over upon arbitration terms. The works were now more or less complete; and very little money was required to put them into working order. Some of the houses were already actually fitted for taking a supply of gas. The proposal in the Bill originally was to take over the capital of the Amman Valley Company, or such of it as had been *bonâ fide* subscribed. But this was objected to by the officials of both Houses of Parliament. An arbitration price for the undertaking would now have to be determined; it would be paid to the Amman Valley Company; and they would have to satisfy their own creditors. The Ammanford Company had agreed with the Urban District Council on two points—one being that they should have nothing whatever to do with the Amman Valley Company, and the second that they were financially able to carry on their undertaking. The District Council had, therefore, withdrawn the petition which they had lodged against the Bill, and were now supporting it.

Mr. *E. Herbert Stevenson* said he had inspected the gas-works of the Amman Valley Company, and found them satisfactory. They had altered the price to be charged for gas from a standard price to a maximum price. When they found what they would be able to do, and came to Parliament again, a proper standard price would be fixed. They now proposed a maximum price of 4s. 3d. per 1000 cubic feet, with which the Local Authority was perfectly satisfied. He himself thought it was perfectly reasonable, having regard to the district to which it applied. The power to borrow asked for in the Bill was altered to one-third of the share capital. With regard to the Amman Valley Company, he said that most of the money had gone into the pockets of the promoters, and the subscribers for shares would only get a fraction back after the arbitration. There were a few debts which were, he believed, secured on debentures; but he did not think the shareholders would ever get a penny of their money.

The preamble of the Bill having been proved, it was ordered to be reported to the House.

## ALLIANCE AND DUBLIN CONSUMERS' GAS BILL.

### House of Lords Committee.—May 4.

(*Before Lord* LUDLOW, *Chairman*, *Viscount* DE VESCI, *the Earl of* LIVERPOOL, *the Earl of* HARDWICKE, *and Lord* SAYE AND SELE.)

This is a Bill to authorize the Alliance and Dublin Consumers' Gas Company to raise further capital.

The Hon. J. D. FITZGERALD, K.C., Mr. HONORATUS LLOYD, K.C., Mr. JAMES O'CONNOR, and Mr. PADDON appeared for the promoters. The petitioners in opposition were represented as follows: Corporation of Dublin, by Mr. BALFOUR BROWNE, K.C., Mr. MACINERNEY, K.C., and Mr. HUTCHINSON; the County Council of Dublin, by Mr. VESEY KNOX, K.C., and Mr. T. SULLIVAN; the Dublin Port and Docks Board (against alterations), by Mr. PEMBROKE STEPHENS, K.C.

Mr. FITZGERALD, in opening, said the Bill was promoted by the Alliance and Dublin Consumers' Gas Company, who supplied Dublin and a very large adjoining district, with the object of obtaining further money powers (the existing capital being nearly all spent), and of consolidating and converting their capital into one uniform stock. In addition, the Company sought power to erect a coal-conveyor, to extend their district to Greystones (a rising watering place in Wicklow), to reduce the illuminating power of their gas, and to adopt the most improved modern method of testing. The Alliance Gas Company were incorporated in 1847; and in 1866, they were amalgamated, with the other Companies who supplied Dublin, under the title of the Alliance and Dublin Consumers' Gas Company. In the centre of the district of supply was the City of Dublin. The district was irregular in shape, being about 14 miles in length; while the area proposed to be served by the present Bill would add four or five miles more. In 1883, the Company applied to Parliament for further capital powers. Until then the Company was a maximum-price concern; the maximum price being 5s. The Corporation of Dublin opposed the Bill, and asked, among other things, that the sliding-scale arrangement should be imposed. An agreement was then arrived at, under which the sliding-scale was adopted—the standard price being 4s. 1d. The Company at that time were entitled to pay back-dividends to the extent of £187,000; and as part of the settlement they gave up this valuable right. They had from time to time reduced the price of gas, and had treated their consumers very well, because they had never paid the full dividend to which the sliding-scale entitled them. The original capital of the Company was £590,000, bearing 10 per cent. interest. Besides this, £50,000 was raised under the Act of 1874, and £286,000 under the Act of 1883—the two latter amounts bearing 7 per cent. interest. The Company had also borrowed, in three sums at 4 per cent., £310,000; making the total share and loan capital issued £1,236,000. They still had unexhausted borrowing powers amounting to £64,000. Dublin and the neighbourhood was a residential city. There were no great manufacturers, and very few big consumers of gas. The large outside area was not thickly populated. Thus the Company had a smaller number of consumers and a smaller consumption of gas per mile of main laid than in most big places. There were a very large number of working people in the area; and the Company had been eminently successful in their efforts to supply them with gas through automatic meters—over 33,000 consumers having already been supplied in that way. There were at least as many more persons in the area who might be supplied in the same manner; and the Company hoped to secure the greater number of them. This however would involve very considerable capital outlay. Another special object for which capital would be required was the coal conveyor. At present, the coal arrived by sea at Sir John Rogerson's wharf, whence it was conveyed to the works by a horse tramway. It was now proposed to provide a conveyor, to be worked by electricity, which would take the coal direct from the wharf to the works. The expenditure would not be very great, but substantial economy and great convenience would result. The coal would be transported at a suitable elevation so as not to interfere with the business of the quay; and the work, except that actually at the Company's premises, would be carried out at the Company's expense by the Dublin Port and Docks Board—the Port Authority. A certain portion of the works stood on leasehold land. It was desirable, however, that the works should stand on land the freehold of which was possessed by the Company. Power therefore was sought to purchase the reversions in every case. No objection had been raised to this proposal by the owner of any reversion except the Corporation of Dublin. The Corporation had a reversionary interest in a lease which had about 900 years to run; but they objected to anything being done with the reversion without their consent. The Company had no desire to raise any unnecessary controversy; and they were prepared therefore to provide that the reversion of the Corporation should not be purchased without their consent. More capital was also required for the ordinary business of the Company, and for the supply of the proposed new area. Power was therefore sought to raise £360,000 in ordinary share capital and £120,000 by means of loans. This capital, totalling £480,000, would carry the Company on for about 15 years. As in the case of all capital raised since 1883, these sums would be issued under the auction clauses. With regard to the proposed conversion of capital, it was desirable to have only one class of shares. It was intended, therefore, to convert the existing capital into such an amount of 5 per cent. stock as would yield exactly the same dividend as at present. No further liability would be placed on the consumer, because the amount which the Company could divide as profit would be exactly the same as if the conversion had not taken place. Experience proved that a better price was paid for new stock when issued at 5 per cent. instead of 7 or 10 per cent. Originally it was proposed to include in the district of supply a considerable area in the County of Dublin. This area was sparsely populated, and not likely to be profitable; and it embraced certain places where the Company thought a supply would be a convenience, and would assist in the development of the locality. The County Council of Dublin, however, objected. The Company had, therefore, withdrawn this proposal, and now wished to include only a very small portion of the county area. The illuminating power of the gas supplied was 16 candles; and authority was sought to reduce it to 14 candles, by means of which, when consumed through an incandescent burner, all the light required could be obtained. All the London Gas Companies had, with the consent of Parliament, reduced their candle power to 14; and their example had been followed generally throughout the country. In the last four or five years a large number of companies and local authorities had applied to Parliament with the same purpose; and in no case, so far as Counsel knew, had the application been refused. It was obvious that if they could get by the supply of 14-candle gas as good an article for practical purposes as by the supply of 16-candle gas, the extra cost of making the higher quality was mere waste. At the same time the Company proposed to adopt the most approved modern form of testing; and for this purpose they had incorporated the Model Clause. Every diminution in the cost of manufacture inured eventually to the benefit of the consumer; but in many of the cases which had come before Parliament, it had been thought—especially where the company was working under a sliding-scale—that the consumer should get an immediate advantage by means of a reduction in the standard price. There were precedents both ways. In a number of cases Parliament had reduced the illuminating power and made no reduction in price, as for instance, in the case of Rotherham and Tottenham and Edmonton. In the case of the three London Companies, however, the adoption of the new method of testing was followed by a reduction in the standard price. This really was the point the Corporation of Dublin desired to raise in connection with the proposal. The new method of testing, as a matter of fact, meant a reduction in the candle power. The gas manufactured by the Dublin Company was tested at present in an antiquated way; and therefore they had to produce gas which, if tested in the best manner, would be shown to be really 20-candle power or thereabouts. In this way it might be said that the proposed reduction was a reduction of 6 candles. In London, the same state of things had prevailed. The nominal reduction in London was 2 candles; but so-called 16-candle gas, as tested in London, was equivalent to 18-candle gas tested by the new burner. The burner used in Dublin was more antiquated than that which used to be employed in London. After considerable controversy, the reduction in the standard price in London was fixed at about ½d. per candle. It was calculated in the present case that the reduction in the cost would be 2½d. per 1000 cubic feet; and for the sake of peace, and to effect a friendly settlement with the Corporation of Dublin (who had not always been friendly to the Company in these matters) the Company were willing to put the figure at 3d., and to say that the standard price in Dublin might be reduced by 3d. in consideration of the reduction in the illuminating power. If this offer were not accepted, the Committee would be asked to consider the matter on its merits. Turning to the petitions, Counsel said the Dublin Corporation had a large electrical undertaking on which they had spent a considerable sum of money. They were supplying electricity throughout the city in competition with the Gas Company, and were thus in the position of rival traders. He desired to eliminate from the case anything in the nature of acrimony; and though the Company's relations with the Corporation had not always been without friction, he had no desire to allude to past history at all. The Company had had a good deal of litigation with the Corporation, and had always been successful. The Corporation in their petition complained that the Company were charging more in the outside districts than in the city itself. The simple reason for this was that the further a place was from the works, the more expensive it was to give a supply. Moreover, when the Bill for the extension of the City of Dublin, so as to include these outside areas, was before Parliament, the Corporation got a clause inserted providing that nothing in the Bill should interfere with the existing rights of the Company; and by means of this clause they avoided the opposition of the Company. Subsequently, however, representatives of the three townships affected—viz., Clontarf, Drumcondra, and Kilmainham—appeared before the Committee who considered the Bill and urged that, if incorporated in the City of Dublin, they should be charged the same price for gas as the City. The Committee, however, decided that the position of the Company was not altered by the extension of boundaries, and that the prices of gas also should not be altered. The matter having been settled in this way, it should not be re-opened now, and certainly not by the Corporation, who had inserted the clause preserving the rights of the Company. The Corporation also asked for a reduction in the standard price. It was to be remembered, however, that the whole of the capital under one Act had been issued on the basis of the standard price being maintained, and the figure at which it stood was part of an arrangement arrived at when it was fixed. The Corporation also objected to a number of other provisions which the Company desired to put in the Bill. Almost all of these provisions, however, were in model form, and Counsel therefore did not think the objection of the Corporation to them was serious. The County Council of Dublin, in their petition, asked for more stringent powers in regard to the laying of mains. The Company worked under the Gas-Works Clauses Act, which provided that if they desired to break open a street, they must give notice to the road authority, and that the road authority's representative was entitled to attend and see that the work was done properly. If the representative objected to the mode of work proposed, and he and the Company could not come to an agreement, the matter, the Act provided, must be settled by a Court of Summary Jurisdiction. Till 1899, the road authority in Dublin was the Grand Jury; and with that body the Company had the most amicable relations. In 1899, however, the Grand Jury was superseded by the County Council, whose Surveyor thought he had a right to prescribe the depths at which mains should be laid, and every particular connected with the work. The matter was taken before the Court of Summary Jurisdiction—in this case, a Stipendiary Magistrate—with the result that the County Surveyor was defeated. Apparently, the position of the County Council was that, having been defeated before every tribunal to which they had gone in case of dispute, they wished the present Committee to over-ride the general law of the country and say that the Alliance Company should be put under a special law. The County Council also objected to the Company supplying gas which was mixed with water gas. The County Council gave no reason for their objection; and he did not know on what ground they could take exception to it.

Mr. *Francis T. Cotton*, the Secretary and Manager of the Alliance and Consumers' Gas Company, examined by Mr. HONORATUS LLOYD,

said they had gas-works in Dublin, Kingstown, and Bray. He gave evidence in support of Counsel's opening statement. All their capital powers except as to £64,000 had been exercised. Between May, 1899, and June, 1908, £170,000 was spent on automatic installations; the Company now having 33,600 slot consumers. The average monthly slot installations numbered about 350; and the demand was still continuing. The Company's ordinary consumers numbered nearly 19,000. The actual selling price in the City was 3s. 7d. The number of consumers per mile of main was 78, compared with 258 in the case of the London Companies, 206 in Leicester, 211 in Edinburgh, and 590 in Glasgow. Thus the consumption per mile of main was very low. As regarded cost of working and production, Dublin was badly situated; all the materials being sea borne. Still the Company had always endeavoured to keep the price of gas low—in fact they had not given the shareholders the dividend to which, under the sliding-scale, they were entitled. Had they exercised their rights, they could have paid the shareholders £200,000 more. Additional capital was required, especially to meet the demand for automatic installations. Power was therefore sought to raise £360,000 in shares and £120,000 by loans. For slot installations, £150,000 was needed. These installations meant a considerable increase in the demand for gas; and it was estimated therefore that £180,000 would be required for additional works. For lands, £46,000 was allocated. As the consumption was increasing the mains became too small, with the result that consumers in outlying districts did not get sufficient pressure. It was necessary, therefore, not only to provide additional mains, but to enlarge some of those now existing. The figure for this purpose was £60,000. Thus there would be £44,000 for contingencies.

Cross-examined by Mr. MACINERNEY: In Dublin the number of persons using incandescent burners was high. He was not aware that half the public lamps were not using, and could not use, such burners. The consumption of gas did not increase last year, and the dividend of the Company had lately been reduced. There was an increase in the slot consumption last year. In 1908, the Company took £16,000 from the reserve fund to make up the dividends of 10 and 7 per cent. There was a deficit in the earnings that year. The reason was that the price of coal went up considerably in 1907 and during a portion of 1908; and in the latter year, there was a decrease in consumption, due partly to bad trade, partly to competition, and partly to the introduction of incandescent burners. The last contract price for coal was 15s. 6d.; and the residuals were worth 5s. The reduction in the price of gas suggested in connection with the alteration in quality would affect not the price now charged (3s. 7d.), but the standard price of 4s. 1d. The consumers would gain nothing directly on a reduction of the standard price at the present time. If the cost of the gas was reduced, the price to the consumer would be reduced. The 3s. 7d. would be reduced when they were able to do it. A reduction in the standard price must have a good influence for the consumer, because it prohibited the Company from paying as high a dividend as they might do on the present standard price. The price of gas was 2s. 6d. in Belfast; but the conditions of Dublin and Belfast could hardly be more different. Belfast was a densely populated small district with a very low mileage of main; Dublin was sparsely populated. It was one of the largest gas districts in the world, with an enormous mileage of main. Belfast was a commercial town; Dublin was not. Belfast, moreover, could buy coal, and he thought all materials, at a lower rate than Dublin could. The Company refused to allow the Corporation's engineers to inspect their gas-works for the purpose of giving evidence before the Committee. The Company sent a letter to the Corporation stating that as the engineers were to be sent purely for the purpose of opposition to the Bill, and having regard to the relations which had existed between the Corporation and the Company for a great many years, they (the Company) could not consent to any engineer examining the works; but they would give them any information to which they thought they were entitled.

In cross-examination by Mr. SULLIVAN, witness said the consumption of the Company's gas in the portion of their district which was controlled by the Dublin County Council was 22 million cubic feet per annum.

Mr. *H. E. Jones*, in reply to Mr. FITZGERALD, said he had advised the Dublin Company for a number of years. When the three Companies supplying in Dublin were amalgamated in 1866, there were three separate works, and a great ramification of mains; the result being that the mains of the United Company were more than double those of any gas company with which he was acquainted. The capital in the concern was therefore necessarily large. Belfast, with 457 miles of mains, sold 1820 million cubic feet; whereas Dublin, with 639 miles of mains, sold 1450 millions. The capital of the Belfast undertaking was only £500,000; that of the Dublin Company, £1,163,000. Belfast had nearly 63,000 consumers and 11,000 public lamps; Dublin had 46,600 consumers and 6300 lamps. There was similar disparity between the Dublin figures and those of the leading English towns. The leakage in Dublin was 9½ per cent., against 6½ per cent. in the average of gas companies. This was due to the extra mileage of mains. The distribution charges—supervision, inspection, repairs, and so forth—were also larger in Dublin. Owing to special legislation, there were left now only about two gas companies in Great Britain and Ireland whose gas was tested by the kind of flat-flame burner in use in Dublin. The result of the enactment that the Dublin gas should be of 16-candle power when used in this burner was that the expenses of the Company had been unduly raised. The Company had been making a kind of fancy article which was not only expensive to them by very nearly 3d. per 1000 cubic feet of gas sold more than it might be, but was unsuitable for the burner now in use, for the incandescent burner and especially for heating apparatus. The Company were supplying a quality of gas which the consumer did not want, and which was unduly expensive to manufacture. Both the Company and the consumer would be much better off with the 14-candle standard. This was generally recognized now throughout the country. Fourteen candle gas was especially desirable when a supply through slot meters was being given. The Company had already obtained 33,000 slot consumers; and he expected they would get quite as many more. This would involve very considerable capital expenditure. An installation of this kind, including a cooking-stove, cost about £5, to cover which the consumer paid about 10d. per 1000 cubic feet extra. Nearly half the population of Dublin was at present unsupplied. If they came in, as they certainly would, about £150,000 would have to be spent in the houses of the people. They would consume about 450 million cubic feet of gas per annum, which, at the low rate of £500 per million, would involve £225,000. The purchase of the reversion was estimated to cost £46,000, which, with (say) £50,000 for contingencies, costs of the Act of Parliament, arterial mains, and other expenses, would make the total £471,000, or only £9000 short of the sum asked for. The burner which was proposed, the Model Bill burner, had been approved by the Board of Trade, and was generally adopted by companies coming to Parliament. It was one result of the Committee of which Lord Rayleigh was Chairman. The Company had not paid within 2 per cent. of the dividend which they might have paid under the sliding-scale. If the change proposed were made, he would advise a reduction of 3d. in the standard price. It was not the fact that reduction of the illuminating power caused increased consumption by the householder. The Commercial Gas Company reduced their gas from 16 to 14 candle power in 1902; and in 1903 the increase in the sale of gas as compared with the previous year was only 4 per cent.—the average annual increase of the previous eight years having been about 4½ per cent. Similar, and in some cases even more marked, results of this kind followed when reductions in illuminating power were carried out by the South Metropolitan Gas Company, the Gaslight and Coke Company, and the Glasgow Corporation.

In cross-examination by Mr. MACINERNEY, witness said the main difference in the conditions of Belfast and Dublin related to the mileage, the leakage, and the capital. This was sufficient to account for the difference in price. The average price in Belfast was 2s. 3d., and in Dublin 3s. 7d. The Belfast Corporation had had the gas undertaking in their hands for many years; and they had written-down compulsorily under an Act of Parliament a great deal of their capital. In addition, they carried some £40,000 a year to the reduction of rates. As soon as the reduction from 16 to 14 candle power was made, the Dublin Company would save 3d. per 1000 cubic feet; and this would go to the consumer. He thought the Dublin people would expect to pay 3s. 4d. for gas of reduced candle power.

Re-examined by Mr. FITZGERALD: In Belfast, the consumption was 4 million cubic feet per mile of main; in Dublin, 2,309,000 feet. In Belfast, the consumers per mile were 137; in Dublin, 78. In these circumstances he would expect the price of gas in Belfast to be much lower than in Dublin. Moreover, the Belfast Corporation had been gradually paying off the capital of the gas concern—only £300,000 now outstanding; whereas the Dublin Company had to pay dividend on the whole of their capital. The Dublin Company had been very carefully managed. A more capable gas administrator than Mr. Cotton did not exist in the United Kingdom. When the amalgamation of the Dublin Companies took place, no dividend was being paid. Mr. Cotton had carved the present success out of that position of affairs.

Mr. *W. R. Herring*, the Chief Engineer of the Edinburgh and Leith Corporations' gas undertakings, stated, in reply to Mr. O'CONNOR, that the conveyer would result in the cost of cartage being reduced from, he believed, 1s. to about 1d. per ton. He knew of no town which was so disadvantageously situated as Dublin was as regarded supplying gas; and it followed that the price of gas there was higher than in cities of the same size. The consumer was bound to benefit largely by any economy which the Company could effect. It was the established practice at the present day to reduce gas from 16 to 14 candle power. The testing methods proposed in the Bill, the bar photometer and the "Metropolitan" argand No. 2, were the standards which were now in ordinary use.

Mr. FITZGERALD, in reply to Mr. Hutchinson, said that there was a clause giving the Company power to borrow £207,000, in addition to raising the £480,000. It was usual where a large concern was converting its capital to give borrowing powers in respect of the converted capital in addition to the existing borrowing powers; and the clause was inserted for this reason. On consideration of the whole case, however, he did not think it necessary to ask for the additional borrowing powers. The clause therefore had been struck out.

In cross-examination by Mr. HUTCHINSON, witness said the capital now sought, £480,000, would last the Company for from twelve to fifteen years. It would not last them thirty years unless they went to sleep in the meantime.

Mr. HUTCHINSON: Do you know that for the last seven years, if the amount of capital per million cubic feet of gas sold be an index of the efficiency and ability with which a concern is managed, your concern has varied in this way: In 1894, you were £839 per million; in 1900, £796; in 1905, £804; and now you are £863?

*Witness:* During this period the Company have installed 30,000 slot meters, which are admittedly more expensive consumers in so far as the capital outlay is concerned; and yet the Company, apparently, from the figures you have given, have been able to more than double the number of consumers without increasing their capital ratio.

The consumers by slot meters are the most profitable?—Not necessarily. At any rate, they are the only ones left to the Company. The electric light has taken all their large consumers.

In further cross-examination, witness said the Company were going to cater largely for the poor consumer. Flat-flame burners would not, however, be used by this class. Experience at Edinburgh and Leith showed that the working classes there had adopted incandescent burners to a much larger extent than the classes who were better able to provide them. When Parliament were granting a company a new concession, the standard price was sometimes dealt with. Asked to name a company selling gas to the same extent as the Dublin Company—namely (in 1908), 1,408,430 cubic feet daily—who had a standard price inside their original limits of supply, of 4s. 1d., and 5s. outside, witness referred to Croydon, where the standard price was 4s. 7d. He did not, however, know their outside price. The Croydon Company sold at 2s. 8d. The leakage in Dublin was small. The price charged in Dublin (3s. 7d.) was abnormal; and so were the conditions there. Gas which was 16-candle power when used in a flat-flame burner would indicate when put through a No. 2 "Metropolitan" argand 19-candle power. The value of a candle had been taken, erroneously, at 1d.; it depended entirely on the geographical position of the company. It was

absurd to assess the value anywhere in the United Kingdom at 1d. It being suggested that the Dublin gas consumer, if the Bill were passed, would be worse off by 9 candles in the power of his gas, witness asserted that the consumer would be better off. He had made a number of experiments by removing burners from various premises and testing with them; and he found that in no instance did they get more than 32 to 35 per cent. of what was possible with a clean, ordinary common burner. The Company were going not only to remedy the evil, but to supply a burner which was best suited for 14-candle gas, the direct result of which would be that the consumer would get a better light for the same consumption, though still using a flat-flame burner.

By the CHAIRMAN: If the present Dublin gas were tested through the proposed new burner, it would equal 19 candles. If the Bill passed, the gas supplied through the same burner would equal only 14 candles. On this basis, therefore, there would be a loss of 5 candles.

Further cross-examined: With the type of burner in common use, the public did not get more than 30 per cent. of the possible from the gas burnt. By introducing a more suitable burner, probably only at the cost of 1d., they would get from 75 to 80 per cent. of the possible. His experience in testing gas of all grades was that a burner should be constructed to suit the gas of each locality. The London burner would not necessarily be the best for Dublin. Less heat for the purposes of a gas-engine would be obtained from a cubic foot of gas of 14-candle power than from a cubic foot of gas of 16-candle power. On this basis, therefore, to get the same amount of power a greater volume of 14-candle gas must be used than would be required with 16-candle gas. No provision was made in the Bill for an allowance to customers who took gas for calorific purposes. More gas of 14-candle power was obtained from a given weight of coal than gas of 16-candle power.

In cross-examination by Mr. VESEY KNOX, witness said the Dublin conditions were exceptionally unfavourable. The sale, however, per consumer in Dublin was 27,696 cubic feet; whereas in Edinburgh it was only 18,522 cubic feet. The price in Edinburgh was 3s., which was less than it was in Dublin. The receipts per consumer in Edinburgh were very much less than in Dublin. The 3s. in Edinburgh, however, practically represented the cost price; the Edinburgh Gas Commissioners not being allowed to make a profit. The average price of the English gas companies was 22d.; in Dublin the average price was 40d. In Dublin, the receipts in money per consumer were very much higher than the average of the English companies. He did not know of a company in which they were so high as in Dublin.

Mr. VESEY KNOX: If you have a high price, or big receipts per consumer, and a small number of consumers per mile of main, is it not a fair inference that it is because you have charged so much that you have got so few consumers?

*Witness:* No doubt the price at which the product is sold affects the consumption; but the price at which it is sold is controlled by the cost of manufacture. Continuing, witness said the Company hoped to obtain 33,000 more slot meter consumers in a few years and further ordinary consumers; and it was possible these extra consumers might be secured without any great increase in the mileage of mains, though some mains would doubtless have to be laid to supply the new consumers. The general tendency would be to increase the number of consumers per mile of main. Sheffield had a great length of mains in comparison with the number of its consumers; and yet the Company were able to supply gas at 1s. 3d. But Sheffield was so exceptionally situated with regard to the sale of coke for manufacturing purposes that more was obtained for the coke from a ton of coal than they paid for the coal in the first instance. Practically, coal cost Sheffield nothing. Within Edinburgh and Leith the charge was 3s.; outside, the charge was 3s. 6d. uniformly. The nearest point to the works at which the increased price was charged was a mile distant. Part of the outside area was eight miles distant. Mains in Edinburgh were not laid at a greater depth under any circumstances than 2 feet. Really the only factor governing the depth of a pipe was frost. Gas lost from 3 to 3½ candles in its power in passing from the works at Edinburgh to the centre of the city—that was, with high-grade gas. With 14-candle gas they expected there would be no loss.

Re-examined by Mr. FITZGERALD: The illuminating power of the gas which they had been supplying quite recently in Edinburgh was 20 candles. When the illuminating power was the same as that proposed in the Bill, there was substantially no loss in the mains. The experience of the London Companies proved this. It was therefore quite unnecessary to make provision for testing beyond the works; it could only put an additional and uncalled-for expense on the Company.

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### Wednesday, May 5.

On the resumption of the proceedings to-day,

Mr. *Herring* was further re-examined by Mr. FITZGERALD. He said no proper comparison could be made between the price of gas in Sheffield and in Dublin. In Sheffield the sale of the residuals covered the cost of the coal; whereas in Dublin the cost of the coal was 1s. per 1000 cubic feet. A fair comparison also could not be made between Edinburgh and Dublin. The ordinary gas-burners and appliances now made were made for the purpose of suiting 14-candle power gas. When used with a higher-grade gas, even a 16-candle gas, they did not give such good results. In 1871 the capital of the Company per million feet was £1530. This figure was gradually reduced until in 1900 it stood at £721, which reflected very great credit upon the Company and upon the management. About that time the Company began to feel very strongly the effect of the competition of electric light, which took away from them a number of their large consumers; the result being that the average consumption per consumer fell from 60,000 to 27,000 cubic feet, which was the average at the present time. To meet this competition the Company began pushing the supply of gas through slot meters, which involved much heavier capital expenditure. In this way the capital per million was raised. If they altered the standard price of the gas they took away from the existing shareholders part of the security on the faith of which their money was subscribed, and they made it more difficult to raise money cheaply in future.

By the EARL OF LIVERPOOL: The heating properties of lower grade gas were slightly (from 3 to 5 per cent.) less. The heating property varied somewhat according to the coal used. In Dublin, they used some Scotch coal. Most of it, however, was North of England coal.

By the CHAIRMAN: The amount of gas lost for each mile of main was small in Dublin, although the total leakage was large, owing to the great length of the mains.

Professor *Vivian B. Lewes*, examined by Mr. FITZGERALD, said he considered it would be to the advantage of everyone if the candle power of the gas in all the chief towns of the kingdom were reduced to 14, and the method of testing suggested by the Dublin Company were adopted. At present, in Dublin they tested the gas in a flat-flame burner. They used a burner which, under normal conditions, would pass from 8 to 10 cubic feet of gas; and they burned the gas through it at the 5-feet rate. This gave an excessively low pressure; but by being very careful to avoid draught, they got the gas to burn satisfactorily, and obtained the best result from it. This method of burning the gas was absolutely inexact, and it was excessively illogical, because it did not develop the maximum light which could be obtained. The principle adopted by Parliament since gas testing came in was that the burner should be one which would develop the full lighting power of the gas without any adventitious causes. The burner now in use in Dublin was absolutely unfit for the purpose of testing 14-candle gas. The use of the incandescent burner was rapidly increasing, and would undoubtedly supersede other methods of employing gas. In Germany, the use of the incandescent mantle was universal. The tendency in England was in the same direction. Five years ago only 30 per cent. of the lighting was done with the incandescent mantle. Now the percentage was between 70 and 80. Experiments he had made showed that flat-flame burners very rarely gave more than 56 per cent. of the statutory lighting power of the gas, and that in many cases it was only 25 or 30 per cent. He did not approve of the method of testing now in operation in Dublin. It was extremely difficult to get any concordant results with it from different observers; and this had led to constant friction between the Corporation and the Company. The method gave a purely fallacious result. Dublin gas, if tested by the No. 1 argand, would be returned as of 18-candle power, and if tested by the No. 2 argand proposed in the present Bill, would be returned as of 19 candles. The saving to the Company if they had to supply 14-candle gas tested by the No. 2 argand would be about 2½d.—the price of a gallon of oil—per 1000 cubic feet. London gas used to be returned as of 16 candles in the No. 1 argand, and was then reduced to 14 candles in the No. 2 argand—a reduction practically of 4 candles. This was met by a reduction of 2d. on the standard price, though the Companies protested that it was a great deal more than the saving they made. On the same basis here, taking the reduction as being 5 candles, it would be represented by 2½d. or so. A reduction of 3d. on the standard price would therefore be very generous to the consumer. For the purpose of a settlement, however, he would advise the reduction of 3d. being accepted. It was said that there was a great difference between a high candle power gas like 18-candle gas and 14-candle gas. Theoretically that was absolutely correct. But in practice the full heat in the gas was not developed, and the difficulty in developing it from a high candle power gas was greater than the difficulty of developing it from a low candle power gas; the difficulty being to get the proper amount of air for complete combustion. The result was that in very many cases the poorer gas would give among general consumers more satisfaction than gas of higher candle power. Where high quality gases had been reduced to low quality, the consumer had practically been unaware that any change had been made.

In cross-examination by Mr. HUTCHINSON, witness said the general principle on which he proposed the change was to bring the whole practice of gas testing into line, both as regarded quality and procedure, because only then would they reach anything like finality in the methods employed. For a given quantity of coal there would be a greater yield of 14-candle gas than there would be of 16-candle gas. The type of photometer should always be prescribed. It would not be unreasonable that it should be distinctly specified in the Bill, subject to the Board of Trade.

Mr. *Corbet Woodall*, examined by Mr. PADDON, said he agreed that the capital asked for in the Bill was justifiable. The capital required for the extension of the prepayment meter business was considerable. Such extension was altogether dependent on the capital available. He thought that within ten or twelve years they might reasonably expect an increase of some 450 million cubic feet in the consumption. The area supplied by the Company had a population of 400,000 people, and, assuming the average number of people in a tenement to be five, there would be 80,000 tenements. Of these, 52,000 were now supplied; so that there was a balance of 28,000. He assumed that 75 per cent. of these would be supplied within a reasonable time. He understood that there were many hundreds of applications on the books of the Company which they were not able to meet. If the Bill were passed, there could be no question that the price of gas would be reduced materially. Every reduction of this kind would tend not only to increase the number of consumers, but the quantity of gas burned by the individual consumer.

Cross-examined by Mr. VESEY KNOX: The net cost of coal in the case of the Dublin Company was very heavy. In the case of the Gaslight and Coke Company, it was 5·61d. per 1000 cubic feet, whereas in Dublin it was 12d. The freight for coal to Dublin was much higher than it was to London. The return for residuals per ton of coal to the Gaslight and Coke Company was 10s.; in Dublin, it was 8s. 11d. There was greater room for saving in the case of the Dublin Company than there was in the case of the Gaslight and Coke Company. A large proportion of the benefit of saving resulting from a change in the statutory conditions under which an undertaking was carried on ought to go to the consumer, and, under the operation of the sliding scale, a large proportion did go to him. He suggested that a reduction of 3d. should be made in the standard price. He agreed that the balance available for saving on coal was greater in the case of Dublin than in London. But there were many other circumstances connected with the question. The actual cost to the Company of enriching the gas was about ⅜d. per candle. If, therefore, they agreed as to the number of candles that would be saved, the number should be multi-

plied by 3d., and to this extent the standard price reduced. By carbonizing coal at a greater temperature, a slightly increased yield of gas was obtained. This increased yield was not, however, 1500 cubic feet per ton. The outside quantity would be 500 or 600 feet. As a town grew and the population increased in the immediate suburbs, the extra cost of supplying gas, relatively, in the immediate suburbs gradually disappeared. It would be quite fair to take this fact into account when the standard price was being revised.

Mr. VESEY KNOX: As these suburbs—Rathmines and Pembroke—have grown up, the cost of supplying these relatively to the cost of the supply within Dublin has increased?

Mr. FITZGERALD: My learned friend does not represent those places.

The CHAIRMAN (to Mr. Vesey Knox): Do you represent these parties?

Mr. VESEY KNOX: Yes. The County of Dublin includes the whole of this area, and representatives of it are members of the County Dublin County Council, and sit on the County Council to represent it. In that sense, I technically represent the whole district. The cost of the appearance before this Committee is shared by the whole area. In addition, in certain cases they did not petition separately, only because they thought that, as they were represented by the County Council, it was unnecessary.

Mr. FITZGERALD said there was no allegation whatever in the petition of the County Dublin County Council that they were authorized to appear for these Urban Councils. The County Council itself was not a lighting authority. The Urban Councils were interested as lighting authorities—everyone of them being a lighting authority and having a right, if they thought fit, to appear before the Committee on the Bill. At the previous sitting, Mr. Vesey Knox had stated that he was instructed that there was an arrangement between the County Council and these Urban Councils that the County Council should represent them. After the rising of the Committee the previous day, the Chairman of the Pembroke Council, in response to a telegraphic inquiry, wired that no such arrangement existed between his township and the County Council. A member of the Kingstown Urban Council, who was in the room, also stated that there was no such arrangement between Kingstown and the County Council. These facts showed that Mr. Vesey Knox had been incorrectly instructed.

Mr. VESEY KNOX said he had been instructed in general terms that the arrangement had been made. In the case of Rathmines, the following resolution had been passed: "That this Committee sees no necessity to lodge a petition against the Gas Companies' Bill, as their interests are common with the County Council who are opposing it." A representative of Pembroke on the County Council took part in the preparation of the County Council's petition, representing, as he thought, Pembroke, and undertaking to advise Pembroke as to what the County Council were doing. Counsel could not, however, say there was a definite arrangement that the County Council should represent Pembroke. In regard to Killiney the Solicitor to the County Council, who was also a member of the Killiney Council, arranged with the Killiney Council that they would not petition because the County Council represented them. He understood that similar communications had passed in other cases. As regarded the Rural Councils, the County Council was entitled to represent them without any arrangement; for while the County Council were not a lighting authority, they raised a rate to defray the cost of lighting, though the actual disbursement was in the hands of the Rural Councils.

Mr. FITZGERALD said that if the Urban Councils had desired to be represented with the County Council by one petition, all they had to do was to sign the petition. The County Council did not, in law, represent these authorities.

The CHAIRMAN, after further discussion, ruled against Mr. Vesey Knox.

*Witness*, in cross-examination by Mr. HUTCHINSON, said he did not agree with the following statement in the report of the Select Committee of the House of Commons on the working of the Metropolitan Gas Companies: "Your Committee have therefore come to the conclusion that the time has come when a reduction might fairly be recommended on the grounds that the cost of the production of gas is now much less than it was when the present standards were fixed, and also because capital can now be obtained at a much less rate of interest than formerly." That conclusion was a mistake. To make any alteration in the standard price fixed by Parliament after capital had been raised on the strength of the standard would be, he thought, a blunder. As a rule, the profit from any such reduced cost went as to about six or seven parts to the consumer and as to only one part to the shareholder. The inducement of that one part to increased economy on the part of the Company was very great, and it would be a pity to interfere with it. He agreed with the Select Committee that the conditions of the gas industry were liable to great fluctuations; but he disagreed with them in their conclusion that it would be wise to limit the period for which capital powers were granted to five years, and that "at such periods if any company came to Parliament for fresh power it would, of course, be within the power of Parliament to revise the sliding-scale if it was thought just and necessary to do so." To bring companies to Parliament at intervals of five years would be most detrimental to the interests not simply of the companies, but of the consumers also. Parliament had not adopted this recommendation, and had in no case fixed so short a period. One of the circumstances justifying the proposed reduction of the standard price in Dublin was economy. The use of water gas for a material proportion of the gas meant a lower capital expenditure, and the use of a material proportion of water gas meant lower labour charges. Labour, however, was only one portion of the cost of making water gas. On the whole, the cost of making 16-candle water gas was about the same as the cost of making 16-candle coal gas. One reason why water gas was used considerably was that it reduced the quantity of coke put on the market. It was nonsense to suppose that the reduction in candle power here proposed would mean the production of 1500 cubic feet more gas per ton of coal, making a difference of 2·8d. per 1000 cubic feet of gas sold. The use of water gas related to the question of cheapness. Sometimes when the price of coal was high and the price of oil low, it was economical to make water gas. As an ethical question, he did not discourage its use. In the circumstances, he did not consider £883 per million cubic feet, the capital of the Dublin Company, extravagant. It might well be that the capital expenditure of the Company since 1893 had been £1000 per million. During this time they had been introducing the prepayment system, which involved expenditure almost, if not quite, equal to the total expenditure on building the works and laying the mains. Consequently, compared with (say) 15 years ago, the capital expenditure now was twice what it had been. In addition, the Company had been extending their works, and possibly a considerable amount of surplus works had to be allowed for.

Re-examined by Mr. FITZGERALD: If it was ever laid down that whenever a company came to Parliament for increased capital powers, as it had to do every 15 or 20 years, the price of gas was to be revised, the security would be enormously affected. Under such circumstances, the better a company behaved, the more carefully it conducted its business, and the more economically it made gas, the worse it would be for the company.

Mr. FITZGERALD: If by economy you had got the selling price down to a low figure, then according to the contention suggested here, you ought to have your standard price reduced accordingly?

*Witness*: It is a total subversion of the whole spirit of the sliding-scale, the idea of which is that the more economically you work, the better you shall be rewarded.

Sir *Thomas Robinson* (of Messrs. Hayes, Cunningham, and Robinson, chemists, who have establishments in Kingstown, Dublin, Rathmines, Clontarf, and all urban districts, except Drumcondra, affected by the Bill) cross-examined by Mr. O'CONNOR, said in all the firm's establishments gas was largely used. He saw no objection to the proposed reduction in the candle power. If the Company had facilities for extending the slot system, he believed it would be largely adopted by the poorer classes, who could not afford to be ordinary consumers.

Mr. *A. S. Findlater* (the Managing Director of Messrs. Alexander Findlater and Co., a firm having establishments in a number of the areas served by the Company) said these establishments consumed gas, and he was satisfied with the treatment he had received from the Company. Having regard to the circumstances of the Company, he thought they supplied at a fair price. The Company were most certainly well managed. In one of his firm's establishments, they had used electricity for a while, but discontinued it in favour of gas with incandescent burners. The change was made more because of the quality of the light than of the economy involved.

This closed the case for the promoters.

Mr. VESEY KNOX then addressed the Committee on behalf of the County of Dublin County Council. He said the position of the County Council, after the ruling of the Committee that morning, was that they were only entitled to appear as consumers of gas in the area. Regarding the position from the point of view of consumers, he asserted that something should be done to reduce the price of gas. The County Council, as the Road Authority, raised other points with regard to the breaking up of roads; but these were merely clause points. It was common ground that the price charged was very high. In 1907, the price in Dublin was 40·49d.; whereas the average of the large companies in England, mentioned in "Field's Analysis," was 22·77d., and of the great corporations of England 26d. The charging of such a high price must seriously lessen the amenities of life and diminish trade. All consumers were affected by high prices; and it was urgently necessary therefore that relief should be afforded. When any undertaker, whether a company or local authority, came for further powers in relation to the supply of gas, it had been the practice of Parliament entirely to review the conditions of the concession and see whether they did not need revision in the public interest. There were cases in which the standard price had been revised, as, for example, in the Lea Bridge instance, in which it was reduced by 6d. It was almost an axiom that a cheap supply of gas was better for both company and consumer. The Dublin Company argued in a circle—complained of the small number of consumers per mile of main, and said that was the cause of the high price. But he suggested that it was the high price which was the cause; and that the way to get a larger return on their expenditure in mains was so to reduce the price as to increase the number of consumers. The explanations of the high price of gas which had been given by the Company's witnesses were not satisfactory; the real reason being want of enterprise by the Company. Parliament should endeavour, as far as it could without injustice, to lower the price, or pass such legislation as would cause the Company to reduce it. An occasion when the Company were seeking not only fresh capital but a reduction in the illuminating power of the gas was a very suitable one for such action. He would not object to the reduction or to the alteration in the method of testing, if a considerable reduction in the standard price was also made. He submitted that there should be a reduction in price, not only on account of the reduction in candle power, but because, as in the case of the Commercial Gas Company, the price was too high in comparison with the price in other large towns. As to what was fair compensation for the proper reduction of illuminating power, he called in aid the evidence he knew would be given to the Committee on behalf of the Dublin Corporation. Of course, the suggested 3d. would not be sufficient. The Company would be able to introduce great and beneficial changes in the method of manufacture if they were to supply gas of only 16-candle power. In these circumstances, the reduction in the standard price should be about 6d. The fact that the Company had not been earning their full dividend at the present standard, showed that the standard must have been fixed too high; otherwise at the price recently charged they would have been able to pay their full dividends. This really showed how fatal to a company was the policy of dear gas; and it showed that the real way to obtain large dividends was to give cheap gas. Proceeding to refer to the differential prices charged, Counsel remarked that it was curious that in an Act of 1874 the Corporation or large consumers could, by giving notice within a prescribed period, require 14-candle power gas to be supplied at a price of 8d. below the price charged for 16-candle gas. This provision was spent. But it was interesting that Parliament on that occasion recognized the principle that if the illuminating power was to be considerably less, the consumer should get the full advantage of it—8d. then being taken to equal the proposed reduction. It was fair that, in sparsely populated and outlying places, the rate should be somewhat

higher than was charged in Dublin; but the outer charges should not be greater than the inner ones to such an extent as they were in this case.

Evidence in support of the petition of the Dublin Corporation was then called.

Mr. *Andrew Robinson*, Assistant Surveyor to the Commissioner of Public Works in Ireland, examined by Mr. BALFOUR BROWNE, said he was well acquainted with the conditions under which the Company sought to carry out their statutory obligations. It would not be to the advantage of gas consumers generally that the Bill should pass in its present form. The provisions of clause 39, which related to the specification of internal fittings and the placing of pipes between mains and consumers' premises, should not be applicable to Crown properties. In regard to clause 44, which dealt with the period of error in defective meters, it was scarcely fair to assume that the error could only have arisen within the previous three months. If a limit was fixed, it should be much longer than three months. Having regard to the nature of the supply demanded in Dublin, 16-candle power gas was more suitable than 14-candle gas. If the candle power were reduced, there should be a corresponding reduction in the price. In many cases the incandescent burner had not been introduced. Where it had not been introduced, and the flat-flame burner was used, it would be unfair to reduce the candle power as suggested. There should be more than one testing-station in Dublin.

In cross-examination by Mr. HONORATUS LLOYD, witness said he attended before the Committee partly as the representative of the Crown. He did not know that some of the clauses to which he objected were Model Clauses.

Mr. *J. J. Healy*, Assistant-Accountant of the Board of Works in Dublin, stated, in reply to Mr. MACINERNEY, that he represented the views of the Board (who were responsible for the lighting arrangements of various public buildings in Dublin) on the Bill. The Crown paid over £13,000 a year for gas in Dublin, of which the Board paid £5500. He considered the price excessive in comparison with that charged elsewhere. The Board objected to the proposed reduction in candle power. They could not use the incandescent burner in all their buildings. One reason was that sufficient pressure could not be obtained to get the proper value out of the burner, especially during certain hours when the demand was exceptionally great. The Board also thought the differential rate should be reduced in some cases.

Mr. *Spencer Harty*, Surveyor to the City of Dublin, gave evidence on some points of minor importance, in regard to practically all of which the promoters accepted his suggestions.

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**Thursday, May 6.**

Mr. *John J. Farrell*, a member of the Dublin Corporation, and a tobacco merchant, said he now largely used electricity because the gas was too dear and too bad. The electricity was about half the price, or less than half the price, of gas. At a meeting of the constituents of the Mountjoy Ward, a resolution was passed calling upon all the Irish Members of Parliament to oppose the Bill. There were constant complaints from all parts of the city. With regard to the difference in the charge for the added area and for the old city, there was a great deal of discontent. In some cases, a portion of the added area was as close to the gas-works as 1¼ miles, and portions of the old city were 2½ or 3 miles distant from the gas-works. There they paid 3s. 7d. per 1000 cubic feet; and in the added portion of the city within 1¼ miles of the gas-works, they paid 4s. 6d. In some cases, the one main supplied both sides of a street; and while on one side the price was 3s. 7d., on the other it was 4s. 6d. The price and quality of the gas, he believed, had led to great depression in trade. If the price of gas was not lowered, the Company would not do much business, because the Electric Lighting Department would cut them out. There were more complaints about the slot business than any other; and people alleged that the meters could be manipulated to the advantage of the Company.

Cross-examined by Mr. FITZGERALD, witness said the Company put in the slot-meter fittings free, and then charged a big additional price to recoup themselves. When Mr. Fitzgerald produced a report of the City Treasurer which showed that the electrical undertaking was worked at a loss, witness said the undertaking was only in its infancy. In witness's opinion, if the Bill became law, practically every vestige of authority now exercised by the Corporation over the Company would be swept away. The Company would have power to supply gas of any quality and quantity; and their working staff would be reduced by one half.

Mr. *T. J. Cotton*, the Gas Examiner and Superintendent of Dublin, said the Corporation's consumption of gas amounted to some £9000 or £10,000 per annum. The Bill was ill-considered.

Mr. FITZGERALD, in reply to the Chairman, said the Bill of 1883 was introduced by the Company and the Corporation petitioned against it; but an agreement was come to, and all the provisions of the Bill that had been referred to now were carried into the Bill of 1883, which passed through Parliament as a Bill agreed on between the Corporation and the Company.

*Witness* said that the motive for agreeing with the Company then was that a high standard price was admitted, on the understanding that the gas would remain of high quality (18 candles), and that the sliding-scale would be adopted. With the present standard price, which was fixed by the Act of 1883, there was great dissatisfaction. Steps should be taken to make a uniform price throughout the whole of the city. With regard to the change of burner, the gas was at present tested through the flat-flame burner. The illuminating power was nominally 16 candles; but it was really about 18. He looked upon this test burner as the fairest that could be employed, between the seller of gas and the consumer. For 2½ years, the gas supplied in Dublin was 20-candle power. Under the Act of 1874, it was provided that, if the illuminating power then indicated in a flat-flame burner at 16 was reduced to 14 candles, the difference in price that should be made for the 2 candles should be 8d. He did not think that the low-grade gas proposed—14 candles, as indicated by the No. 2 "Metropolitan" burner, and not by the flat-flame burner—was at all suitable for Dublin. In the burner the Company proposed to use and the present flat-flame burner there was practically a difference of 5 candles. He maintained that any burner which gave a different quality of gas in the public testing-room from what was supplied to the consumer, was an unjust measure. Fivepence would not compensate the consumer for the loss of 7 candles.

The CHAIRMAN said he did not understand before that there was any dispute about the burner.

Mr. FITZGERALD explained that the report of the Departmental Committee was that the best possible burner should be used, and they mentioned the No. 1 argand; but the matter was referred to the Gas Referees of London, and the burner they had fixed upon was the "Metropolitan" No. 2—the one adopted in the Model Clauses.

MR. HUTCHINSON remarked that the improved burner meant that with the same gas it showed a higher illuminating power.

*Witness* said it would give an apparent value of 14 candles at the testing-station; but in reality in the consumer's house it was only 9 candles, as tested with the existing standard. He believed the Gas Referees of London had prescribed the burner entirely under a mistake. In the Bill of 1868, under which they were appointed and their duties defined, it was stated that the test burner adopted by them should be such as to be practical for use in the consumer's house. But this burner never could be of any practical use. There was only one testing station in Dublin; and the gas going to the north of the city was not tested.

Dr. *Frank L. Teed*, F.I.C., said that, when comparing two burners, it was impossible to say the exact differences they would give in normal candle power, unless the nature of the gas to be tested was known. The richer the gas, the better value it would give in the flat-flame burner, and approaching more nearly to that obtainable with an argand burner. The proposed reduction in conjunction with the change of burner would reduce the illuminating power. Using a No. 8 Bray, it would be reduced from 16 to about 7 candles. The tests he had made showed that, with the flat-flame burner, the result was 14·77 candles, and with the "Metropolitan" No. 2 19·64. The difference between the two burners was greater with poor gas than with rich gas. The proposed alteration in the illuminating power also involved a great reduction in heating power. As a result of investigations he had made with the Dublin gas and its calorific value, he said that when the gas was nearly up to its statutory power he found 144·8 calories per cubic foot; and if it were increased up to the 16-candle standard, it would amount to 146, or thereabouts. The gas of the Commercial Gas Company, at Wellclose Square, giving 14-candle power by the No. 2 argand, only came out at 126·8 calories, and in other official tests it averaged 125. By the different illuminating power suggested, they would lose 50 per cent., or more, on the flat flame, and 15 per cent. of the heating power, if used in stoves either for cooking or for heating rooms. It was an extremely vague offer which was made by the Company to provide the consumers with flat-flame burners. The burner ought to be prescribed. The "Metropolitan" No. 2 argand was anything but an ideal burner for testing. The incandescent burner went wrong much more frequently, and to a much more serious extent, than the flat-flame burner; and there was a far greater proportional loss of illuminating power from an incandescent burner under these circumstances than from a flat-flame. Sulphur in gas had a deleterious effect on many things about a room; and in Dublin the Company were restricted to 20 grains per 100 cubic feet. In the interests of the consumer the test for sulphur compounds should certainly not be done away with. With regard to the London Gas Companies, the sulphur clauses were done away with; and the result was that, instead of being in the neighbourhood of 20 grains, the sulphur went up to 80 or 90 grains per 100 cubic feet.

Mr. *Isaac Carr*, Gas Engineer to the Widnes Corporation, said it was undesirable to reduce the illuminating power of the gas, because the alteration in quality adversely affected every type of burner for illuminating purposes, as well as the consumers who used gas for cooking, heating, and motive power. It would more especially affect users of flat-flame burners. For a number of years past, the Widnes Corporation had sold gas within the borough at a lower price than any other town. The highest price was 1s. 2d. per 1000 cubic feet to small consumers, 1s. to consumers of over 3,000,000 feet per annum, and 10d. to all users of gas for motive power. Though they supplied at these very low rates, they had not sought to reduce the illuminating power. This policy should also be adopted in Dublin, because the consumer with the lower-grade gas had to pay more. The reduction in illuminating power was equivalent to an increase in price; and it was not to the advantage of the consumer that these low standards of quality should be granted. In Widnes, the present 14-candle power gas, by the existing statutory burner, was 20 candles when tested by the burner proposed in the Bill. The proposal in the Biil was to reduce the illuminating power to 14 candles, which would mean a reduction of 7 candles, or 43 per cent. The 43 per cent. that the consumer would have to use extra in the flat-flame burner would amount to 1s. 6·4d. per 1000 feet. He had always found great difficulty in making gas of so low a quality as 14 candles from Lancashire or Yorkshire coal. It had recently been publicly acknowledged by producers of coal gas only that it was impossible to make so low a candle-power gas as 14; and he submitted that Parliament had never understood the question in granting so low a standard as 14 candles in the No. 2 "Metropolitan" burner. The people who induced Parliament to grant this concession now publicly acknowledged that they were unable to make gas of this quality. Of course, the idea was that the lighting did not depend upon the burning of the gas, but upon the heating of the mantle. On the question of calorific value, the reduction from 16 to 14 candles was also a loss to the consumer in heating power. He had made tests with gas of both qualities, and found that there was a distinct falling off in the calorific value of the gas which would cause the consumer to use more. He placed the value of this fall at 11·9d. per 1000 feet. The 14-candle power gas in the No. 2 "Metropolitan" argand gave an illuminating power of 9·1 candles per cubic foot, when consumed at the rate of 5 feet per hour. Dublin gas of the statutory quality gave an efficiency of 16 candles; so that there could be no contention on the point of illuminating power. In Dublin, the present standard was 16 candles in the flat-flame burner. The London County Council's last published figure as to the Commercial gas averaged, in the flat-flame burner, 8·9 candles. If the consumer was to be treated

fairly, the price of 3s. 7d. per 1000 feet in Dublin should be reduced to 1s. 6·4d. The use of gas in incandescent mantles suffered a loss also. He agreed with the promoters that there was very little difference, with careful manipulation, between a high-grade and a low-grade gas; but the ordinary consumer who used the two kinds was incapable of the necessary careful manipulation, and in applying the two qualities of gas in practice he suffered as serious a loss with the incandescent mantle as he did with the flat-flame burner. Witness produced and explained to the Committee two burners that were just alike, externally, for consuming gas in incandescent mantles. One burner was for low-grade and the other for high-grade gas. Internally, he said, the orifice in the nipple in the burner for low-grade gas would pass 43 per cent. more than that for the high-grade gas; and this was the practice of the makers. Though the promoters in all these Bills had argued that there was no difference in the incandescent burner, and that low-grade was as good as high-grade gas, yet when a person went to the manufacturers—the Welsbach Company—and asked for a burner for one quality of gas and a burner for another quality of gas, he was given two different burners, the one capable of passing practically 50 per cent. more gas than the other. When he went to Dublin to inspect the works of the Company, he was refused admission; but he saw them casually two years ago, and they were the worst arranged works he had ever come across. The capital that had been spent was abnormal, and worked out at £883 per million cubic feet. This was double the necessary amount. It was the highest capitalized undertaking that had ever come to his notice. He considered the capital necessary for this gas was 25 per cent. less than for ordinary coal gas.

*Witness*, replying to the CHAIRMAN, said the Cork Gas Company were similarly situated to the Dublin Company. In fact, there was nothing to discriminate Dublin as an abnormal situation for the manufacture of gas, as between Cork and Belfast. For a works of the size of Dublin, a capital of £650 per million cubic feet of gas sold was ample. Having examined the amount of gas sold, the increase would be at the rate of 3·45 per cent. per annum in the last eight years. From this he concluded that the increase of the Company's business in the future would be less than in the past. Therefore it was reasonable to suppose that the capital they would want in the next 15 years would be less than they had spent in the last fifteen years—he would say for both share and borrowed capital, £225,000. There was no justification for charging a differential rate in different parts of the city.

Mr. *J. G. Newbigging*, Gas Engineer to the Manchester Corporation, stated that he went to Dublin, and was refused admission to the works. He, however, examined them from the exterior. From the way in which they manufactured gas, as evidenced by their constitution and capital, he did not find any attempt to reconstruct the plant in proper and systematic order. He thought their conditions were unparalleled in the United Kingdom. The price of gas was abnormal, having regard to the scale of manufacture; and that was due to bad management. The site of the works was eminently suited for planning out works for the economical production of gas. The amount of capital expended per million cubic feet for the year ending 1908 was £883. Between the years 1899 and 1908, the increased quantity of gas sold was 67 million feet; and in order to provide for this, £224,000 had been expended—at the rate of £3348 per million. In 1908, the quantity of gas sold was 60 million feet less than was sold in 1904; but notwithstanding this diminution, there had been an expenditure of £91,208, which was evidence of extravagance. The capital for which the Company were asking would last them for 38 years. At Manchester they turned out in the year about four times the quantity of Dublin—6000 million cubic feet; and the price was 2s. 3d. per 1000 feet for ordinary consumers. The capital per million cubic feet was £496. Witness put before the Committee an estimated saving in the cost of manufacture by reducing the illuminating power of the gas by 7 candles—from 16 to 9 candles in the flat-flame burner, or from 21 to 14 in the No. 2 "Metropolitan" argand. The estimate was: Total gas made, 1908, 1,555,461,000 cubic feet. Carburetted water gas, 48 per cent. = 746,621,280 feet; coal gas, 52 per cent. = 808,839,720 feet. Increased make per ton on coal gas, 1500 cubic feet at 3s. 7d. = 5s. 4½d. ÷ 12,000 cubic feet = on total make 2·79d. Saving in enriching: 746,621,280 feet at 2⅞d. = on total make, 1·37d. Saving in enriching: 808,839,720, 13 to 16 candles in flat flame, at 1·43d. = on total make, 0·63d. Giving a total saving per 1000 cubic feet of gas made of 4·79d., or £28,000 per annum. Taking into account, he said, the conditions at Dublin, £700 per million cubic feet would not be extravagant. With the experience of the last fifteen years, showing an increase at the rate of 277 millions, if this were the experience of the next fifteen years, the capital they asked for would be equal to £1800 per million, which was £1100 more than they ought to have. From his experience in reducing the quality of gas, he estimated that the Company would save 4·79d.—in round figures, 4¾d.—per 1000 cubic feet of gas made. With the modern method of the consumption of gas, he estimated that the consumer of gas, with the incandescent burner, would lose to the extent of 4·3d.; so that the two figures taken together equalled 9·09d., which was what they would save in manufacturing cost and what the consumer lost by using the incandescent burner—leaving the flat-flame burner out of the question. Making a comparison, he said that in Dublin gas cost 21·17d. per 1000 cubic feet, including coal, cannel, and oil used in the manufacture of carburetted water gas; and in Belfast the cost was 15·47d. The gross cost of the gas sold was 42·31d. in the case of Dublin, as against 25·25d. in Belfast. The ordinary selling price in Dublin was 3s. 7d.; and in Belfast 1s. 10½d.; the capital was £883 per million feet sold in Dublin, as against £583 in Belfast.

*Witness*, in cross-examination, said in Manchester they would not for a moment supply a customer with 14-candle power gas. He agreed that it had been the custom in recent Acts to reduce the candle power from 16 to 14, but it had never been supplied. A diluted gas must be given. Parliament had been misled. So far as he knew, there had been no case, except the one at Falmouth, where, when the candle power had been reduced from 16 to 14, there had ever been more than 4d. allowed. Nevertheless, in this case, 9d. was a fair figure. Falmouth, where 4d. was allowed, was merely a reduction of illuminating power, without a change of the test burner. If there were a change in the burner, it would double the amount—8d.

**Friday, May 7.**

Mr. BALFOUR BROWNE, in addressing the Committee, remarked that this was a very important issue between two great public bodies. It was, of course, the duty of the Corporation to watch very closely the proceedings of the Company, which was a far more satisfactory arrangement than the one which had found favour at some time of placing the gas undertaking in the hands of the local authority itself. When a gas undertaking was owned by the local authority there was really no one to watch the interests of the consumers. This Company had a large capital; and, in consequence, they had been away from Parliament for 26 years. They were now seeking to add to the capital an enormous amount, which would enable them to again be away from Parliament for a great number of years. The Bill had been so carelessly prepared that he asked the Committee to order the promoters to take it back and prepare another, after the investigation that had taken place, and see if they could not come to fair terms with the Corporation. The capital requirements had made the Corporation and the consumers suspicious of the Company. They had been refused admission to the works, which was a mistake for a Company to make. What were they concealing? If the works were good, why should not they allow them to be seen? The Corporation were suspicious of the capital of the future, just as they had been suspicious of the capital in the past. Then they were seeking to reduce the illuminating power from 16 to 14 candles. It was not very useful for them to make comparisons in this matter; but there would be a large saving, and ought to be a commensurate reduction. When the Bill was introduced, there was no reduction at all; and then Mr. Fitzgerald said they must take something off. But it was quite obvious that 3d. was not a proper reduction. Then they were altering the burner. What with the new burner and the new test, the consumer would only get 43 per cent. of the illuminating power for the price he was now paying. In certain cases Parliament had allowed a reduction of the illuminating power; and it would be the right thing to do where all the gas was made from coal, but not where some of it was water gas. It might be that 16-candle power gas was the right gas for Dublin; but if it was not, then the reduction ought to be at least 1s. 6d., because they were losing 43 per cent. of the lighting power and 15 per cent. of the heating power. In Dublin they found that people on one side of the street were paying a differential rate from people on the other side. This was most undesirable; and it could easily be adjusted without really injuring the Company. The promoters ought to take back their Bill, and bring in another showing a fair, uniform rate over the district, and dealing with the anomalies which he had mentioned.

The Hon. J. D. FITZGERALD, in reply, said no one had disputed that further capital powers were required. The provisions with regard to the reduction of the illuminating power and for the testing of the gas were such as had been sanctioned by Parliament over and over again. Every other provision in the Bill was an ordinary one which gas companies all over the country obtained from Parliament—generally without dispute—and almost in every case the Model Clauses had been adopted. The fact that they were Model Clauses showed that it was in accordance with the practice of Parliament, because such clauses were not drawn up by the officials of the House unless, by the repeated decisions of Parliament, a matter had become an ordinary provision which ought to be inserted in Gas Bills. The high capital of the Company was due to the fact that Parliament had originally allowed three competing Companies to exist in Dublin. In 1866, the Companies were amalgamated by the Dublin Gas Act; and this Act created a Company with a large amount of capital. The new capital was £480,000. In 1898, they reduced their capital to £760 per million feet of gas sold—they cut it down by more than one-half. The increase up to £880 had not been challenged by any witness of the Corporation. In 1898 and 1899, the Company were subjected to severe competition with the electric light undertaking of the Corporation, who were selling electricity cheaper than gas. They were carrying on the electricity undertaking at a loss, owing to the low price which they charged. Being subjected to such competition with an undertaking not conducted on commercial principles, but with the rates of Dublin behind it, the only course open to the Company was to preserve their position by pushing their slot-meter consumption, for which purpose they had to spend £170,000. The evidence of the expert witnesses was that, for the purpose of slot-meter consumption business, they had got to spend more capital per million cubic feet than in the other branches. The figure of £880 had simply been produced by the additional expense of supplying 33,000 slot consumers. Whereas they had now got 33,000 slot consumers, there was an equal number of persons who might have a supply if the Company were given the capital to undertake it.

The CHAIRMAN: The original capital of the Company was £500,000, which lasted for 26 years; and you are now asking for £480,000.

Mr. FITZGERALD said that in 1866 the capital was £590,000. But in 1883, and for long afterwards, the slot meter was not known. He believed the capital they were now asking would carry the Company on for about fifteen years. With regard to the point of the opponents not being allowed to view the works, he said they had to keep the opposite party at arm's length; but he did not see what the state of the works had to do with the matter of capital. The question was brought in as a point of prejudice. As to the illuminating power, the South Metropolitan Company asked to have their standard reduced from 16 to 14 candles; and after the fullest investigation, they were allowed to do so.

The CHAIRMAN: I do not think you need trouble yourself with regard to that matter.

Mr. FITZGERALD (continuing) said Lord Rayleigh's Committee adopted the principle that the gas should be tested in the burner to show the best results. They came to the conclusion that the "Metropolitan" argand No. 2 burner ought to be used; and the Company were now only seeking to put themselves in line with the London and Provincial Companies. Generally the question of the amount of the reduction in the standard price, unless agreed on beforehand, had been settled by the Committee before whom the Bill came; but he thought it desirable that they should make a fair offer, and he considered the saving would be about 2½d. For the sake of peace, they had made it 3d. The whole reason for the reduction of the illuminating power was that, where 14-candle power gas was properly burned, it was absolutely

as good for all purposes as 16-candle gas. The clause dealing with sulphur compounds was a Model Clause affirmed by Parliament over and over again.

The CHAIRMAN said there was no necessity to address the Committee on that point.

After the Committee had considered privately for a little while, the Chairman announced that their unanimous opinion was that the Bill should proceed.

## OLDHAM CORPORATION BILL.

### Local Legislation Committee—Tuesday, May 4.

(*Before Sir* FRANCIS LAYLAND-BARRATT, *Chairman*, *Dr.* COOPER, *Mr.* J. S. FLETCHER, *Mr.* E. GARDNER, *Mr.* HALL, *and Mr.* MANFIELD.)

This Bill, which has been under consideration for several weeks, has for its objects to authorize the Corporation of Oldham, among other things, to confer further powers in respect to the supply of gas. The gas part of the measure was reached to-day.

Mr. BALFOUR BROWNE, K.C., Mr. WEDDERBURN, K.C., and Mr. JEEVES appeared for the promoters (Messrs. Lewin, Gregory, and Anderson, being the Parliamentary Agents). There were a large number of petitions against the Bill from various authorities and companies in the district.

Mr. JEEVES said the reason why he now proposed to deal with this part of the Bill was that many of the petitioners who were petitioners against the water portion, were also petitioners against the gas, and expense would be saved if the Committee would not mind taking the parts out of order.

The CHAIRMAN having assented,

Mr. JEEVES, continuing, said that on the gas, only two or three questions arose. There were three principal points of contention, as he understood it. One was that they wished to take certain powers with regard to residuals. The second was that they proposed to take the standard burner according to the Model Clauses for the testing of gas. These two points were objected to by some of his learned friends. Then, also, certain questions, somewhat akin to those they had been dealing with in the matter of water, arose on the question of gas. He would propose, subject to anything that might be urged, to take first of all the matter of the burner; after that, to take the question of residuals; and, subsequently, the question of the charges, which did not really arise on the Bill at all, but which was a matter brought in as a condition of the grant to them.

After discussion between the Committee and Counsel,

Mr. JEEVES said the gas part of the Bill dealt with a variety of matters. He did not propose to open any question other than that which was the subject of the particular clause 63. The clause was as follows:

(1) For testing the illuminating power of the gas supplied by the Corporation, the burner to be used shall be that known as the "Metropolitan" argand No. 2, the photometer shall be the bar photometer, the standard light shall be that supplied by Harcourt's ten-candle pentane lamp, and in making the test the burner shall be so used as to obtain from the gas when burned at the rate of 5 cubic feet per hour the greatest amount of light. Provided that the Board of Trade may, on the application of the Corporation or any twenty consumers of the gas supplied by the Corporation, approve the use of any other burner photometer or standard light which may appear to the Board to be equally or more suitable for the testing.

(2) The Corporation shall, within three months after the passing of this Act, provide all the necessary apparatus for testing gas under this section, and shall at all times keep the same in proper order and repair.

(3) As from the passing of this Act, section 149 (experimental meter) of the Act of 1865 shall be, and is hereby, repealed.

What they were trying to do by this clause was to adapt to the gas which the Corporation supplied the test which was provided by the Model Clauses of to-day, instead of the old test provided by section 149 of the Act of 1865. This section of the Act of 1865 read as follows: "The Corporation shall, within six months next after the announcement of this Act, cause to be erected in some convenient part of their works, and in such a situation as to test the whole of the gas supplied by them, an experimental meter furnished with an argand 15-hole burner and a 7-inch chimney, or other approved burner and chimney capable of consuming 5 cubic feet of gas per hour, with other necessary apparatus for testing the illuminating power of the gas." This test of gas was of necessity alike to the consumers in the borough of Oldham and to those in the gas limits outside the borough. Gas consumers in the borough were perfectly satisfied to let the Corporation have this modern test. So far as he knew, the consumers in some of the outside areas were also content; but there were one or two local authorities who desired them to remain where they were, and to continue to test the gas by the test provided in the 1865 Act. With regard to this, he would point out that it could not affect the consumers in the outside areas in any way different from those in the borough, because there was no differential charge, and, further than this, there was a limitation of the profits which the Corporation might make. If, as a result of this absence of differential price and limitation of profit, it followed that there was any economy resulting from the use of this burner, or if there was any increase of revenue from the use of the burner, both of these things must inure to the benefit of the consumer in the outside area equally as to the benefit of the consumer in the inside area. Why, therefore, the consumers in some of these outside areas should think it worth while to come here and object to a proposal of this kind, was difficult to understand. The urban district of Chadderton raised the point.

Mr. J. W. GREIG (who appeared, with Mr. TALBOT, K.C., for the Springhead Urban District Council, and the Chadderton, Crompton, Lees, and Royton Urban District Councils, and the Limehurst Rural District Council) said that all the outside districts raised it.

Mr. JEEVES understood that, although it was raised in the joint petition, only Chadderton really objected to the proposal made.

Mr. GREIG thought that all the outside districts objected. He understood that another one, which he did not represent (Failsworth) did not object. All the others whose names were on the three petitions now before the Committee—Springhead, Chadderton, Crompton, Lees, Royton, and the rural district of Limehurst—objected. They were all within the gas limits.

Mr. JEEVES: Does Failsworth object?

Mr. FLEETWOOD PRITCHARD (who appeared with Mr. HONORATUS LLOYD, K.C., in support of the petition of the Failsworth Urban District Council) said they would not object, provided they were satisfied that the benefits would really go to the consumer.

Mr. JEEVES, having thanked Mr. Pritchard for stating his position, proceeded to deal with the joint petition of the Urban District Councils of Chadderton, Crompton, Lees, and Royton, and the Rural District Council of Limehurst. The petitioners objected to the provisions of clause 63 of the Bill "whereby the Corporation would be enabled to supply an inferior quality of gas." If this particular allegation were true, all he could say was that the modern clauses were encouraging the supply of gas of an inferior quality. They would be told that, as a matter of fact—as no doubt they had been told in many other cases—with the modern burner the lower candle power gas within certain limits was a much more useful gas for the purpose of lighting, and that the effect of the proposed change in the test would probably be to reduce to the Corporation the cost of the gas supplied. If that were so, the benefit must inevitably accrue to everybody within the limits of the gas supply, which included all the outside areas with whom they had been dealing in the matter of water.

Mr. *William Newbigging* gave evidence from his experience as to the conditions of gas supply in Oldham. He and his father before him had for many years been the Consulting Engineers of the Corporation with regard to gas supply. As to clause 63—change of burner—it was, generally speaking, taken from the Model Bill. This provision in the Model Bill had undergone a good many changes. Since it was adopted by the Gas Referees in 1906, it had been practically put into every Bill that had come before Parliament. The difference between the burner that was specified in the 1865 Act of the Corporation, and the one which it was now proposed to insert in the present Bill would be from 2 to 2½ candles. The return which the Corporation Gas Department made to the Board of Trade was based on the burner which they were using at present. The Corporation had no intention, so far as he understood it, to alter or reduce the quality of the gas which they were at present supplying. They simply asked for powers to adopt this burner. So that the only alteration that would take place would be this, that instead of returning something like 18 candles in the Board of Trade returns, they would return something like 20½ candles. They had no intention of reducing the quality of the gas at present.

Mr. *Arthur Andrew*, Business Manager of the Gas and Water Department, testified that it was certainly more in the interests of consumers that the proposed change should be made than in the interest of the Corporation.

Mr. GREIG then contended that if the Committee permitted the Corporation to alter the method of testing their gas, the inevitable result would be that in the outside districts (where they used the gas largely in flat-flame burners) they would have to use more gas; and therefore the commodity supplied would be of greater cost to them. They were already labouring under difficulties with regard to the supply of gas as they were under with regard to water. They no doubt paid the same price in the outside districts; but the Corporation were entitled to supply within their own district, and they did so gratuitously. They also applied the whole profits of the undertaking within their own limits. Therefore, any increase in the supply of gas to them was an additional hardship in the competition which naturally went on between manufacturer and manufacturer in the district. Of course, the price of gas that was going to be supplied was not to be increased; but their contention was that lowering the illuminating power of the gas would inevitably necessitate either the employment of incandescent mantles or a larger number of flat-flame burners in places where the latter were used. He would be able to produce evidence to show that in the outside districts the flat-flame burner was employed not because of any want of progress in the outside areas, but because in the card-room and other parts of a cotton mill the flat-flame burner was preferable, as it was less dangerous.

Mr. *J. B. Tattersall*, President of the Oldham Master Cotton Spinners' Association, and Vice-President of the Federation of Master Cotton Spinners' Associations, gave evidence against the propcsals of the Bill. He was followed by Mr. *Isaac Carr*, whose evidence was to a large extent similar to that given by him in the Salford and Dublin cases—reported elsewhere, pp. 379, 386.

### Wednesday, May 5.

Mr. E. GARDNER presided over the Committee to-day.

Mr. *S. Smethurst*, Chairman of the Royton Urban District Council, said it had been explained to them that it was a necessity of card-room operations that they should have the flat-flame burner for safety, and if the quality was reduced, the illumination would also be reduced, and they would either need to have more burners or larger ones, with the result that the atmosphere would be vitiated, and the operatives would suffer. But he wanted to say that he thought it had been made apparent that protection could be ob ained for the incandescent burner in the card-room. He did not personally object as much to this question as he did at the beginning. If they had the incandescent burner, it had to be of a special form. It was suggested that it might cost from 5s. to 16s.; but he did not know anything about that. There had been many complaints from the ordinary cottages as to the poor quality of the gas.

Mr. JEEVES submitted, on behalf of the Corporation of Oldham, that in this matter of the best burner they would be wrong if they did not progress, as they would be wrong if they did not progress in other things. Whatever they did, they would be guided in the future by the same business spirit that had distinguished them in the past.

The CHAIRMAN said the Committee were advised that they had better not give a decision on this matter, being short of a quorum. They had heard the evidence, and would give a decision when all the members of the Committee were present.

Mr. JEEVES said that there were two other matters. One was the

question of manufacturing any residual products. He was afraid this would still have to be fought at length. The other was the question of the financial position of the consumers as a whole to the Corporation, as the owners of the gas undertaking. In the case of gas, they had no differential charge; whereas in the case of water they had a differential charge. The question of gas charges was very fully considered by Parliament in 1886. When they did away with their power to make differential charges, they also limited the amount of profit that they were entitled to make. But the case of the opponents then was that there ought to be a limit. The whole question before Parliament was what the limit should be. Several of the opponents desired to raise all these questions again, and put themselves in the position to do it by their petitions. But he was happy to say that an arrangement had been come to between the Corporation and the petitioners who were petitioning in this direction, the terms of which they would bring up later. As the result of these arrangements, it would not be necessary for the Committee to consider this question at any length.

After discussion, it was agreed that the following Tuesday [to-day] should be fixed for the consideration of the water and gas clauses.

The question of the manufacture of residuals was next proceeded with, and the petition of the Royton Urban District Council heard.

Mr. JEEVES said what they asked for in clause 56 of the Bill was this:

The Corporation may, upon the lands described in the second part of the third schedule to this Act, erect and maintain works, machinery, apparatus, and conveniences for the manufacture, conversion, utilization, storage, and distribution of materials used in, or residual products resulting from, the manufacture of gas, and may do all such acts as they may think proper for manufacturing, distilling, selling, providing, supplying, and dealing in lime, coke, chemicals, tar, pitch, asphaltum, ammoniacal liquor, oil, and all other products or residuals of any materials employed in, or resulting from, the manufacture of gas.

Mr. GREIG gathered that one of the reasons Counsel submitted to the Committee for the granting of this clause was that in other places the manufacture of residuals was carried on without the slightest objection or nuisance being caused. It would meet their case if they were willing to put into this clause a provision that if any nuisance was caused by the manufacture or conversion, or exercise generally, of the powers of the clause to them, or inhabitants in the neighbourhood, they should have the usual legal remedies.

Mr. JEEVES said it would be ridiculous for them to come here and ask for this power under these circumstances.

Mr. *Jason Thompson*, the Chairman of the Gas-Works Committee of the Corporation, Mr. *T. Duxbury*, the Gas Engineer to the Corporation, and Mr. *W. Newbigging* were called in support of the clause.

Subsequently Mr. *Isaac Carr* and Mr. *S. Smethurst* were called in support of the petition.

Mr. GREIG urged that the Oldham Corporation were now seeking an extra power beyond that which they had at present—a power which Parliament had carefully indicated should be notified to everybody who would be at all likely to be affected by it. The Standing Orders were directed to the very point that all these people who were within certain limits should have notice of the power when it was sought. Obviously, the principle underlying that was this—that in the process of making these residuals there might be objectionable nuisances created. In this case, the Royton Urban District Council, who were practically representing the interests of their ratepayers, and the inhabitants of the district, had come to the conclusion that without some protection there was a possibility of this sort of thing. The Corporation no doubt made out a strong case, on the ground that they might be able to reduce the cost of their work, and they might be able to make their manufacture of gas yield more revenue if they had these powers of turning their residual products into a marketable commodity. If they were going to do it in their own neighbourhood, and for their own purposes entirely, of course, Parliament might concede it; but the result of the concession of these powers would be that the Royton people would be exposed to what would be a very serious matter in the future. It might be true that such works could be carried on in other places, and had been carried on in other places, without a nuisance; and the evidence that had been given on behalf of the Corporation, taking their construction of such powers, was that it could be so carried on, and that there was no likelihood at all of a nuisance arising. Why not, then, give the protection asked for? There could be no harm in putting on the face of the Act of Parliament what Parliament had put on the face of every Special Act passed with regard to the ordinary production of lighting gas. The Gas-Works Clauses Act included this very clause. Something to this effect they wanted. They would have been glad to have seen the clause disappear altogether, because they were apprehensive. Their position was imperilled by the clause as it stood. They did not wish the production of residuals to go on in their district. But they were not taking up an absolutely hostile attitude if a strong case was made out for such a thing on the ground of more profit to the Corporation and a reduction of price. But they did say that a parliamentary concession to them of the extraordinary power ought to be accompanied by a proper protection to them as the inhabitants and ratepayers of the district.

Mr. JEEVES having replied for the promoters,

The CHAIRMAN said a decision would be given the following day.

### Thursday, May 6.

The CHAIRMAN to-day (Sir F. Layland-Barratt) said the Committee were prepared to grant clauses 56 and 63 (burner to be used in testing gas).

Other parts of the Bill were next considered; and the Committee adjourned until to-day.

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Lord Onslow, Lord Chairman of Committees, had before him last Tuesday the following Gas Bills: The Leyland and Farington Gas Bill, which has for its object the granting of further powers to the Company and authority to change the name of the undertaking to the Leyland Gas Company; the Littlehampton Gas Bill, for the dissolution and re-incorporation of the Company; and the Conway Bill, which empowers the Borough of Conway to supply gas outside the limits of their district, to borrow further moneys, and for other purpose. The Bills were ordered to be reported with amendments.

## PONTYPOOL GAS AND WATER BILL.

### House of Lords Committee.—Monday, May 3.

(*Before Lord* RIBBLESDALE, *Chairman*, *Marquis of* BATH, *Lord* ZOUCHE, *Lord* SALTOUN, *and Lord* BIDDULPH.)

This is a Bill to enable the Pontypool Gas and Water Company to construct water-works, raise more capital, and for other purposes.

The promoters were represented by Mr. BALFOUR BROWNE, K.C., Mr. HONORATUS LLOYD, K.C., and Mr. G. J. TALBOT, K.C.; Mr. VESEY KNOX, K.C., and Mr. R. S. CLEASE appeared for the Monmouthshire County Council.

Mr. HONORATUS LLOYD, in opening, said that originally there were a number of petitions against the Bill; but these had now been reduced to two. In 1873, the Company were incorporated for gas and water purposes. They took over an undertaking which had been formerly carried on by a limited Company. The Company's limits of supply for water were extended in 1890. The district had for some years increased at a very abnormal rate, and they had had to take precautions and provide further works. In 1906, an epidemic of typhoid broke out. The Company's water was being continually analyzed and found to be good. There were wells which were found to be polluted, among them being one at the gas-works. A medical inspector of the Local Government Board thought the epidemic had been to some extent accelerated by this well; and actions were brought against the Company, by the Pontypool Council and others, to recover damages. There were in all fifteen actions brought. But Mr. M'Kenna and a member of the County Council intervened; and as a result of negotiations, the Company, while denying liability for the epidemic, and without prejudice, agreed to pay a sum of £4500, which the Council were to disburse. The Bill was placed before the Town Council of Pontypool, who offered no opposition. But there were two petitions—from the Monmouthshire County Council and certain consumers of water. The County Council pointed out that, having regard to the past history of the Company, no further powers should be granted to them without full investigation. The Company should be compelled to give a satisfactory supply of water. Counsel pointed out that it would not be fair to compel the Company to supply these places, which could not be reached by gravitation from their works. It would be unreasonable to ask them to do more by constructing special works. This was a question which had constantly arisen, and was last year fought out on the Liverpool Corporation Bill, where the powers given were similar to those for which the promoters were now asking. The Company were now constructing further filtration works. There was a report by the Local Government Board upon which one or two matters remained outstanding; the chief point being that the Board suggested that the powers asked with regard to bye-laws were unusual. There was also a report from the Board of Agriculture and Fisheries as to compensation water being given to a certain river; and by the Bill compensation water was being given.

Mr. *Davey*, civil engineer, of Westminster, gave evidence in support of the Bill.

In reply to Mr. VESEY KNOX, witness said that they had filtration works at every source of supply. He agreed that when the epidemic broke out, they were supplying from the gas-works spring, and that the water was not filtered. With regard to the supply of water to places at a considerable height, he said they would give a supply if it could be done at a reasonable cost. Under the Bill, the Company would be the judges as to what was "a reasonable cost."

### Tuesday, May 4.

When the Committee resumed their sitting this morning,

Mr. VESEY KNOX, in reply to the Chairman, said there were three points which the County Council raised in petitioning against the Bill. With regard to filtration, they brought forward a clause asking that there should be the right to have the question of the quality of the water determined by arbitration. The second point was with reference to pressure; and the County Council asked that, in addition to the obligation undertaken by the Company, there should be a proviso that the water should be supplied from the sources that would give the best available pressure, where it could be done at a reasonable cost. This matter also should be determined by arbitration. Their third point was with regard to the authorized charge for baths.

Replying to the Chairman, Mr. BALFOUR BROWNE said that the remarks in the report of the Local Government Board, as to bye-laws, were not of great value. The proposed clauses with regard to this matter were in the Bristol Water Bill last year, and were now working there quite satisfactorily.

Mr. *Charles Hawksley*, speaking with regard to the point of pressure, said he did not know of any precedent placing an obligation upon a water company to give a supply "at a reasonable cost" as might be determined by arbitration. Parliament had thought fit to trust water companies to carry out the duties that were placed upon them.

Mr. VESEY KNOX, addressing the Committee on behalf of the Monmouthshire County Council, said that there had been some question raised as to whether the County Council had any right to interfere in this matter; but he contended that the Standing Orders determined the question. One of the general duties of a county council was to see to the sanitary condition of the water supply. With regard to the question of filtration, he said there was no doubt that the Company had supplied water without filtration. Where outbreaks of typhoid fever had occurred, it had been frequently found that the analysis of the water did not show it to be defective. The County Council were not asking the Company to give a supply to the top storey of every house within their limits of supply, but that, when the proposed reservoir was built, the water there should be made available for all parts of the district which could be reached at a reasonable cost.

Mr. BALFOUR BROWNE, replying on behalf of the promoters, denied that this was any concern of the County Council's, having regard to the fact that there were three local authorities affected, and who were quite satisfied with the proposals contained in the Bill. The filtration had been agreed to with these local authorities.

The Committee approved of the preamble of the Bill.

# MISCELLANEOUS NEWS.

## GAS-WORKS SIDINGS AND RAILWAY RATES.

### RAILWAY AND CANAL COMMISSION.

(*Before Mr. Justice* A. T. LAWRENCE, *the Hon.* A. E. GATHORNE-HARDY, *and Sir* JAMES WOODHOUSE.)

**Corporation of Birmingham v. Midland Railway Company, London and North-Western Railway Company, and Great Western Railway Company.**

**Seventh Day.—Tuesday, March 30.**

This was a case in which the Corporation of Birmingham, who have constructed extensive private sidings at their Saltley, Nechells, Windsor Street, and Swan Village Gas-Works, asked for an order declaring them entitled to an allowance or rebate on charges made by the Midland, London and North-Western, and Great Western Railway Companies on inward and outward traffic to the various works. They also asked for a declaration that the London and North-Western Company had exceeded their maximum charge for use of trucks. Further, they claimed damages in respect of the past six years' overcharges. The earlier proceedings were reported on pp. 105, 167, 240, 316.

The following were the Counsel engaged: For the Corporation: Mr. BALFOUR BROWNE, K.C., Mr. J. A. FOOTE, K.C., Mr. A. H. M'CARDIE, and Mr. J. B. WORTHINGTON (instructed by Messrs. Sharpe, Pritchard, and Co., Agents for Mr. E. V. Hiley, Town Clerk of Birmingham). For the Midland Railway Company: Sir ALFRED CRIPPS, K.C., and Mr. L. MACASSEY (instructed by Messrs. Beale and Co.). For the London and North-Western Railway Company: Sir ALFRED CRIPPS, K.C., Mr. J. A. SIMON, K.C., M.P., and Mr. J. B. ASPINALL (instructed by Mr. C. de J. Andrewes). For the Great Western Railway Company: Sir ALFRED CRIPPS, K.C., Mr. J. A. SIMON, K.C., M.P., and Mr. HAROLD RUSSELL (instructed by Mr. R. R. Nelson).

**Mr. Balfour Browne's Reply for the Corporation.**

On the sitting of the Court to-day,

Mr. BALFOUR BROWNE at once proceeded, on behalf of the Corporation, to reply on the whole case. He said that, to clear up any difficulties, and to get rid of some of the propositions that had been put forward by Sir Alfred Cripps and Mr. Simon, he would refer to the powers of the Provisional Order of 1891, which gave a railway company the authority to charge for conveyance. Section 2 of the Order said: "The maximum rate for conveyance is the maximum rate which a company may charge for the conveyance of merchandize by merchandize train, and, subject to the exceptions and provisions specified in this schedule, includes the provision of locomotive power and trucks by the company and every other expense incidental to such conveyance not hereinafter provided for." Then his learned friend skipped from section 2 to section 5; but he left out two very important subsections to which attention should be directed. Section 3 was: "The maximum station terminal is the maximum charge which the company may make to a trader for the use of the accommodation (exclusive of coal-drops) provided, and for the duties undertaken by the company for which no other provision is made in this schedule, at the terminal station for or in dealing with merchandize, as carriers thereof, before or after conveyance." All that was provided for there was accommodation or services undertaken at the terminal station after or before conveyance. Section 4 was with regard to the service terminal: "The maximum service terminals are the maximum charges which the company may make to a trader for the following services when rendered to or for a trader—that is to say, loading, unloading, covering, and uncovering merchandize, which charges shall in respect of each service be deemed to include all charges for the provision by the company of labour, machinery, plant, stores, and sheets." These were the only things that a railway could charge for to a trader where the merchandize was conveyed from a station to a station; and if at the station of arrival the trader wanted to do the unloading himself, there would be found in the remainder of section 4 provision for his doing so. When traffic was conveyed from a station to a station, how was a rate made up? As a fact, they knew that railway companies did not go into it elaborately and make it up in this way. Unfortunately, they generally looked at what the traffic would bear—the three maxima. That was to say, the maximum for conveyance, the maximum for station accommodation, and the maximum for service terminal. They charged all three; and it was admitted on the other side that, in that case, if they were charging an accommodation terminal and a service terminal, the trader had a right to have this taken off as a rebate. That was, the trader who did not have the services, or who did not use the accommodation, had a right to the rebate. Supposing the three maxima together came to £1, he had, according to the other side, a right to a rebate. Now suppose, instead of finding that the traffic would bear £1, they put it at 10s., but did exactly the same services, could anybody believe that this rate did not cover the services and the accommodation? Yet this was the Companies' case here. It did not matter in the least whether the rate was under the maximum or not. This contention of the other side was founded on the New Union Mills case, which seemed to him an extraordinary decision at the time. But even if it was binding, it had no bearing on the present case. This case (Vol. 9, "Railway and Canal Traffic Cases," p. 152) was not under section 4 at all; and the Birmingham Corporation were before the Court under section 4 of the Act of 1894. The case referred to was under section 33, sub-section 3, of the Act of 1888; and, just to show how dangerous it was to argue from one section to another which was totally different, he would point out that the case in question was decided simply upon section 33, and the question whether section 4 of the Act of 1894 made any difference was expressly reserved. Mr. Justice Collins said: "He may claim some other form of rebate in respect of something which he has not received, and which other people receive for the same rate. It may or may not be that section 4 does entitle a person under these circumstances to a rebate, notwithstanding the railway company assert that no charge is made in respect of the particular matter in regard to which he asks for the rebate. I do not decide that point. I only say there does not appear to me any inconsistency between section 4 of the Act of 1894, and section 33, sub-section 3, of the Act of 1888." The Act of 1894 was a punitive measure; and section 4 read: "Whenever merchandize is received or delivered by a railway company at any siding or branch railway not belonging to the company, and a dispute arises between the railway company and the consignor or consignee of such merchandise as to any allowance or rebate to be made from the rates charged to such consignor or consignee in respect that the railway company do not provide station accommodation or perform terminal services, the Railway and Canal Commissioners shall have jurisdiction to hear and determine such dispute, and to determine what, if any, is a reasonable and just allowance or rebate." There was not one word there as to whether they were charging the maximum or not. It was about the rate they charged that the dispute arose; and he was to have a rebate in respect that they did not provide accommodation or do any service for him.

Justice LAWRENCE: But does not the section begin by pre-supposing that the rate includes a terminal or station accommodation?

Mr. BALFOUR BROWNE: No; distinctly not. It says: "Whenever merchandize is received or delivered by a railway company at any siding or branch railway." There is no terminal there possible. That is why I read sections 2, 3, and 4 of the Provisional Order. Their only power is to charge for accommodation at a station, for services at a station. This section does not deal with that at all.

Justice LAWRENCE: It does not arise from that. It says the dispute arises "as to any allowance or rebate to be made from the rates charged to such consignor or consignee in respect that the railway company do not provide station accommodation."

Mr. BALFOUR BROWNE: Quite so. It cannot be assumed for an instant that there is a terminal in that. It is a rate without a terminal.

Justice LAWRENCE: Suppose the case of a trader who has sidings, and who is simply charged a conveyance rate upon his traffic, and a low conveyance rate, if you like, so as to make the thing perfectly plain. Can he, notwithstanding that that is all he is charged, get a rebate or allowance?

Mr. BALFOUR BROWNE: Suppose the station rate is 10s., and the railway company said: "We are not going to charge you a station rate at all. We are going to charge you 8s.; and that is only conveyance to your door, and putting the train over it." Certainly I cannot claim the 1d. They have given me a rebate. And that is the dispute.

Justice LAWRENCE: There are two classes of cases to which the mind must be applied. In order to get this section applicable so as to entitle the claimant to a rebate, you must be sure the case is one in which there is some charge being made that is not justified.

Mr. BALFOUR BROWNE: All that this section says is, when there is a dispute, if the trader is entitled to a rebate, he is to have it. But remember what we are doing here is this: We are charged exactly the same rate that is charged to an ordinary trader to the station; and I have also tried to say that I will assume—even if the House of Lords decides it—that the 10s. rate to the trader at the station does include something for accommodation. If there is any portion of that 10s. rate paid for station accommodation, then, on showing that the same rate is charged to me, I am entitled to a rebate. This was decided in the first Birmingham case. Mr. Simon has said: "Once you find that you are within your maximum powers, there is really no inference to be drawn from the circumstance that the rate happens to be the same from or to a siding as it is from or to a station." This proposition I deny. Whether it is within the maximum or not, I ask the Court to draw the inference that the Company are charging something for the accommodation. I am going to argue: First, that there is a terminal in rates to Lawley Street; secondly, that I do not care whether there is a terminal in the rates so-called to Lawley Street or not, because I will ask you to infer that there is something charged for station accommodation; and, thirdly, that they do not perform any services to me which can be placed against the terminal. Proceeding to deal with the last point, the learned Counsel said that section 5 of the Provisional Order read: "The Company may charge for the services hereunder mentioned, or any of them, when rendered to a trader at his request or for his convenience, a reasonable sum, by way of addition to the tonnage rate." Was there anything which the Companies did in this case that was either at the request or for the convenience of the Corporation? Absolutely nothing. It was obvious from the words of the section which came after that the service must be one special to the trader; but was there anything special which the Companies did for the Corporation? Take Swan Village as an instance. Everything they did for the Corporation was done for traders at the station. This was admitted. If the Great Western Company had a set of sidings close to Swan Village, where the traffic could be marshalled, they would not need to carry it to West Bromwich. Therefore what they did was for their own convenience—just as the London and North-Western Company, not having a set of sidings at Nechells, for their own convenience carried the traffic from Nechells to Windsor Street, and said quite properly that they did not charge anything. It might suit the Railway Companies to have the marshalling done at Windsor Street, or ten miles away; but it would not make a bit of difference to the Corporation. How could it be said to be at their request or for their convenience? Therefore he said there was no service here that they did not do for the trader. Look at Saltley. Mr. Thompson had stated that when the coal came in a train mixed with other people's goods, exactly the same service was performed for the Corporation trucks as for those of an ordinary trader. But he said it was different when it came in a full train-load. Did the Companies want full train-loads or single trucks? Then what about sorting, if the traffic consisted of a single truck, or of two trucks going in different directions? The thing was nonsense.

Justice LAWRENCE: Are we to take your argument as going to the length of denying that there is such a thing as sorting?

Mr. BALFOUR BROWNE: I deny absolutely that there is such a thing

as sorting by a private trader. It does not exist. Sorting is marshalling, and marshalling is sorting. There is no such word as "sorting" anywhere used except by Mr. Simon. It is not recognized by Statute. It is marshalling traffic; and marshalling traffic is putting it in station order. How can a trader put it in station order?

Justice LAWRENCE: Suppose the Postmaster-General, instead of paying the Railway Company for providing a sorting carriage and sending sorters to do the sorting, gave the railway company a bag of letters, and said: "There they are. They are all addressed. Deliver them to where they are going." Would not that be casting upon the railway company a service that they would have to perform?

Mr. BALFOUR BROWNE: I think the railway company would very likely refuse to undertake the obligation of sorting them out for the Post Office.

Justice LAWRENCE: So do I; and that is exactly what the Railway Company could do with the trucks. Of course, I am only putting this as a mere illustration.

Mr. BALFOUR BROWNE: No traders' trucks are sorted by traders. Take them on the Lawley Street sidings, who sorts them there?

Justice LAWRENCE: But they sort them there and charge for it. That is the difference. It is all part of the services for which they are entitled to charge, and for which they do charge; and in making analogies, you jump from a case in which there is a charge made, to another in which you want to say no charge should be made. They cannot make the whole terminal charge, no doubt; but they can make a charge.

Mr. BALFOUR BROWNE: With great respect, that is not so. Take traffic coming in through Washwood Heath sidings. There the services for the trader are exactly the same as for us. Who pays for that—the trader? It is in the conveyance rate, not in the terminal, because they could not charge a terminal at Washwood Heath.

Justice LAWRENCE: That, of course, depends really upon whether the Washwood Heath sidings are sidings ancillary to delivery or ancillary to conveyance.

Mr. BALFOUR BROWNE: No, my Lord, it depends upon whether they are at a terminal station.

Justice LAWRENCE: Do you mean you could not have your sidings performing some service?

Mr. BALFOUR BROWNE: These are very large exchange sidings; and there is no charge for exchange with other companies. That is part of conveyance.

Justice LAWRENCE: Of course, it is part of conveyance.

Mr. BALFOUR BROWNE, continuing his argument, said the Corporation could not make up the trains for the Companies. They must do it themselves; and therefore this charge for sorting was entirely outside their powers. It was marshalling and shunting, which was clearly the duty of the Companies. His Lordship had suggested that Washwood Heath might be a terminal station; but the definition of "terminal" by clause 26 of their own Provisional Order was: "The term 'terminal station' means a station or place upon the railway at which a consignment of merchandize is loaded or unloaded before or after conveyance on the railway, but does not include any station or junction at which the merchandize in respect of which any terminal is charged has been exchanged with, handed over to, or received from any other railway company, or a junction between the railway and a siding let by or not belonging to the company, or in respect of merchandize passing to or from such siding, any station with which such siding may be connected, or any dock or shipping place the charges for the use of which are regulated by Act of Parliament." In support of his contention that the marshalling and shunting operations were not a special service to the Corporation, he quoted the case of the *Chatterley Iron Company v. North Staffordshire Railway Company* (Vol. 3, "Railway and Canal Traffic Cases," p. 238), which, however, was before the passing of the Provisional Order. Sir Frederick Peel, in his judgment in the case, said a railway company could not carry on the business of a carrier if they had no place to shunt or to stand or deposit their trucks in; and they could not therefore be said to perform a special service (which were the words of section 86 of the North Staffordshire Company's Act of 1847) by having and using or granting the use of such places. In that case they had to decide the question of whether it was a special service; and the same point had to be settled now. But the words were even stronger in the Provisional Order at present concerned. It must be for the convenience or at the request of the Corporation. If the providing of these sidings was not a special service, then the Washwood Heath sidings, the Duddeston Mill sidings, the sidings at Windsor Street Station, the sidings at West Bromwich, and the haulage to West Bromwich, all had to come out; and the Companies had not provided any service at all in the Corporation works. They admitted that they were bound to bring the traffic to the gas-works sidings; and, further than this, the Court would see what their obligation was under the Railways Private Sidings Act of 1904, section 2: "The reasonable facilities which every railway company are required to afford under section 2 of the Railway and Canal Traffic Act, 1854, as amended or explained by any other Act, shall include reasonable facilities for the junction or private sidings or private branch railways with any railway belonging to or worked by any such company, and reasonable facilities for receiving, forwarding, and delivering traffic upon and from those sidings or private branch railways." "Upon and from"—that was their duty. The Companies did not do this. Really, the Corporation might claim that they themselves were doing a great deal of the services. With regard to the Saltley works, the Company were doing the work. They brought the traffic to the Corporation points and pushed it in. That was upon the gas-works siding. But with reference to the Midland traffic at Nechells, this was not the case; and the same remark held good with regard to the North-Western Railway and the coke at Windsor Street. In these respects the Companies stopped short of their duty. He was not claiming anything for this; but he wished to emphasize the fact that the Companies were doing no more than their duty when they brought the traffic to the Corporation siding, and whatever happened until they brought it to the siding (unless it was at the request or for the convenience of the Corporation) could not be counted as against the Corporation in the price the Companies were to charge. It was conveyance, pure and simple. He did not want to go at greater length into the services rendered; but he wished to show now that there was a terminal in the charge made to Lawley Street.

Justice LAWRENCE: The difficulty of all these questions is that in the terminal services at a station things are done for the trader which are almost, if not quite, identical with the services which are done here for you; and while it is true to say that the services done for you are not worth as much as those done for the trader, your argument seems to me to go to show that they cannot charge you anything.

Mr. BALFOUR BROWNE: I am going to try to say that. At the station it is not the same service at all that is performed.

Justice LAWRENCE: I am not saying it is; but surely some of the things are.

Mr. BALFOUR BROWNE: None of them, I think.

Justice LAWRENCE: Well, you think none.

Mr. BALFOUR BROWNE: No, my Lord. What is done is this: First of all, they provide the station. They do not do this for us. Secondly, they allow the truck to stand three days for the consignee of the goods to take delivery. They do not do this for us. The trucks are returned almost immediately. What do they do at Lawley Street for the trader similar to what they do for us? Nothing. They deliver our coal, and nothing more. I have the letter here of Feb. 20, 1906: "Subject to these remarks, the Midland would assess 1d. per ton as the terminal charge at all the collieries named, and another 1d. as the terminal charge at Saltley gas sidings, Nechells gas sidings, and Lawley Street Station, attributing the remainder of the rates charged to conveyance." You will see that this was a terminal charge at Saltley gas sidings, Nechells gas sidings, and Lawley Street Station—not a special service at all. In their own disintegration, they put down: Terminal at Lawley Street upon coal, 1d. I am trying to show that in all the local rates for coal they charge a terminal of 3d. Upon coke, by their own disintegration, they are charging 3d. at Lawley Street; and coal and coke are in exactly the same class—Class A. Therefore I ask the Court not to believe that disintegration upon coal. They come here and say they are only charging 1d. upon this traffic at Lawley Street, and that therefore when they say "1d. for your services," they have equated it. I say even if our services cost them 1d., I am still 2d. out by their own showing. But, my Lord, do you believe the deduction of this terminal? For two years after our application, they said they were charging at the receiving end a terminal upon the coke of 3d. But they were charging us 2¾d., and even up to 8¾d.; and it was only two years after our application that they reduced it to 1d. Now it is 1d. all round. How can they justify the 1d.? They now say that the services are worth 1d.; but they were charging us 8¾d. on Lichfield City, and it varied in other cases. Was there really any proper charge made at all?

Justice LAWRENCE: But you are going to get the benefit of that.

Mr. BALFOUR BROWNE: With regard to that I am not complaining. I was only commenting on what they say now. Is it true when they say that they charge 1d.?

Justice LAWRENCE: The difficulty is in forming any sort of conclusion upon the point. The Legislature has thrown upon us the investigation of a matter which is unexplainable. The Company never have disintegrated before; and they naturally disintegrate as at the moment the particular clerk who has got charge of it may think best; and if that is found not to be good disintegration, another is substituted. But neither of the disintegrations has any relation to, or anything to do with, the original making up of the rate.

Mr. BALFOUR BROWNE: I agree as to the difficulty; but that is not to deprive the trader of his right to a rebate or an allowance.

Justice LAWRENCE: No, I do not say it is to deprive him in the least; but when you are arguing about whether it is, or whether it is not, the thing, whether it is true, or whether it is not, my mind really fails to see how one is to grope one's way to a conclusion.

Mr. BALFOUR BROWNE (continuing) said first he wanted the Court to infer, from the fact that the Company admitted a terminal charge at the receiving end (among others at Lawley Street) of 3d. in coke, that there was a 3d. terminal on coal. Therefore if the Company did a 1d. service for him, he was entitled to 2d. But, further, he claimed that a trader could demand a rebate when no terminal was included in the rate. He had tried, of course, to show that there was a terminal in this case. But he was going to assume now that there was no terminal at Lawley Street at all; and he said that under these circumstances he was still entitled to a rebate. The claim was not in respect of whether the terminal was included. It was that the Railway Company did not provide services or accommodation. Whether they charged a terminal or not, they did not provide station accommodation for the Corporation. In the Salt Union case, to which Sir Alfred Cripps had referred, Mr. Justice Wright, in his judgment, said: "I wish very emphatically to reserve to the Court the right and the power of inquiring, under section 4 of the Act of 1894, whether a trader is not entitled to a rebate without reference to the question whether the second terminal is, in fact, included in a rate, though the rate may be within the maximum, where a comparable rate can be shown with reference to which the question can be raised." In the same case, Lord Justice Rigby, in his judgment, said: "The question before us turns upon the construction of section 4 of the Railway and Canal Traffic Act, 1894. I am unable to read the section as if the words 'in respect that the railway company do not provide station accommodation or perform terminal services' were not there, and that in place thereof there were the words 'in respect that the railway company have charged for station accommodation or terminal services.' If that had been intended, it would have been easy for the Legislature to have said so. Having regard to the language used in the section, it appears to me to be open to an applicant who brings himself within the section to prove his claim to an allowance or rebate in any way he can; and I am far from saying—though I do not decide it—that he might not prove his claim to an allowance or rebate without proof that the railway company had, in fact, charged him station accommodation or terminal services. . . . An applicant can make out any case which reasonably shows his right to an allowance or rebate; and I cannot think he is confined to proving that the rate charged does, in fact, include a charge for station accommodation or terminal services."

Sir JAMES WOODHOUSE: That seems to me a very strong expression of opinion in favour of the argument you are presenting.

Mr. Balfour Browne (continuing) said that Lord Justice A. L. Smith, on whom his friend relied, said: "In my opinion, the meaning of the section is that if a trader makes out by any evidence, whether by means of a comparable rate or in any other way, a *primâ facie* or presumptive case that he has been wrongly charged for station accommodation or terminal services, then the Railway Commissioners should say that a case has been made out which the railway company are called upon to answer, and that the company must then show that they have not made the charge of which *primâ facie* evidence has been given." Lord Justice Vaughan Williams, in his judgment, entirely concurred with Lord Justice Rigby: "What the section seems to me to say is this: Where the trader has his own siding or branch railway, and the railway company and the trader cannot agree as to what shall be the rate, or whether the rate actually charged by the railway company in the past and proposed to be charged by them in the future is a just rate, then in any such case the Railway Commissioners shall fix the rate. The Commissioners are by the section to 'have jurisdiction to hear and determine such dispute,' a different thing to my mind, from a cause of complaint, 'and to determine what, if any, is a reasonable and just allowance or rebate.' I confess that I do not feel at all certain that, whenever it is proved that the trader owns a private siding or branch railway, and that he consigns goods from the siding or branch railway over the lines of the railway company, and that a charge is made by the railway company against him, the trader has not a right, upon proof of those facts, to call upon the Railway Commissioners to determine what, if any, is a reasonable and just allowance and rebate to make by reason of the fact that the railway company have not the expense and trouble of providing station accommodation or of performing terminal services." If this was right law, he (Mr. Balfour Browne) was landed, and his learned friend, with his various propositions, was out of it. Lord Justice Vaughan Williams continued: "I see nothing in the Act which throws upon the applicants the duty of doing more than showing that the amount charged seems to be an unreasonable amount to charge for the service rendered by the railway company"—not one word about maximum charge from beginning to end. Then the case of *Tennant v. Caledonian Railway Company and North British Railway Company* had a peculiar likeness to the one now before the Court; and there it was held that the special services the applicants received at the hands of the Railway Companies were not a satisfactory reason for the same rates being charged at the applicants' private sidings at Panmure as were charged at Carnoustie and Barry, and that the applicants were entitled to have lower rates than the rates in force for similar traffic at Carnoustie and Barry—the extent to which they should be lower to be determined by the amount presumably charged for terminals at that end, ascertained on the principle adopted in Pidcock's case, less the reasonable sum that might be found due to the Railway Companies for special services. It was also held that where a railway company provided station accommodation, or performed terminal services, it was only reasonable to suppose that station and service terminals were equally with the charge for conveyance a component part of their rates.

Mr. Macassey: The facts in that case differed materially from those in the present one. All the outgoing traffic was marshalled by the applicants themselves on their own sidings.

Mr. Balfour Browne (continuing) said that in the case of *Vickers, Sons, and Maxim v. Midland Railway Company and Others* (Vol. 11, "Railway and Canal Traffic Cases," p. 249), when it was before the Railway Commissioners, Sir Frederick Peel, in his judgment, said: "The first question is, Are 85 per cent. of these rates outside the Act of 1894 by reason of their amount being consistent with there not being in them any station or service terminal at the Sheffield end, and of there being no evidence that such terminals are included? That the section is not limited to cases where the rate takes in, as one element, a charge for expenses at a terminal station, but may entitle a person to a rebate where, for the same rate that other people pay, whether the rate is one entire sum or a sum in which there are particular portions for particular expenses, he does not receive the same station accommodation that they do, is a view which this Court has from the first kept itself free to take." This was a view which was not dissented from in the Court of Appeal, when the case went there. Mr. Justice Wright, in his judgment on the same case, said: "If it were necessary to decide the point, I should hold that section 4 of the Act of 1894 gave jurisdiction to allow a rebate even without proof that any definite amount of terminal was included in the rate." He would next refer to the case of *Cowan and Sons v. North British Railway Company* (Vol. 11, "Railway and Canal Traffic Cases," p. 271). Here Lord Cobham said: "The rates themselves are identical; and if we follow the principle laid down in Tennant's case, we must assume that the station rates include some charges for the station accommodation provided." His friend had relied on the judgment of Lord Kinnear in the Scottish Court of Appeal, when that case went there; but it was not a ruling in his favour, because the Judge distinctly said: "We are not going to decide it." In any case, there was no decision against the Court of Appeal in England; and under these circumstances he ventured to say that the argument on the other side could not prevail, having regard to the decision of the Court of Appeal in the Salt Union case.

Justice Lawrence: Do you mean the argument as to jurisdiction?

Mr. Balfour Browne: I mean the argument as to jurisdiction, or the argument that whenever they show on their allegation that a terminal is not charged, then your jurisdiction goes.

Justice Lawrence: That is part of the argument as to jurisdiction; but though they ventilated the argument, so to speak, as to jurisdiction, they did not proceed upon it. They did not ask us to stop the case.

Mr. Balfour Browne agreed, but said they did ask the Court to hold that, as they were under the maximum, the question did not arise. He maintained, on the authority of all the cases he had referred to, that when the Court found the rates charged to stations were the same as those charged to private sidings, they had to infer—and there was a presumption in favour of the view—that there was a station terminal included. He asked the Court to act upon this assumption—which was far more than an assumption in this case, because the Corporation had tried to prove that there were station terminals included. In a case of this sort, there was a retrospective claim. Section 12 of the Railway and Canal Traffic Act, 1888, said: "Where the Commissioners have jurisdiction to hear and determine any matter, they may, in addition to, or in substitution for, any other relief, award to any complaining party who is aggrieved such damages as they find him to have sustained; and such award of damages shall be in complete satisfaction of any claim for damages, including repayment of overcharges, which, but for this Act, such party would have had by reason of the matter of complaint: Provided that such damages shall not be awarded unless complaint has been made to the Commissioners within one year from the discovery by the party aggrieved of the matter complained of." If the Corporation were right that the Companies had been charging them a station terminal in their rates when they had no right to do it, this was an overcharge. There was the case of *Gilstrap, Earp, and Co. v. Great Northern Railway Company and Midland Railway Company*. There Mr. Justice Wright's judgment was: "I will only say on this question that, on consideration, it seems to me that where this Court makes an allowance to an applicant under section 4 of the Act of 1894, *primâ facie* that allowance ought to begin at the date of the application on the one hand, and not merely as at the date of the judgment." Why it went back merely to the date of the application, he could not conceive. Mr. Justice Wright, however, had vacillated, because in a previous case he had said: "I am very far from saying there may not be cases in which a retrospective claim for damages may not be made out by an applicant under section 4 of the Act of 1894." In the Salt Union case, Lord Justice Vaughan Williams said: "The scope of the section, as I understand it, is to provide, not only for the past, but also for the future." He proceeded to refer on the same point to the Scotch case of Tennant and Co.

Justice Lawrence: The existing authority in this Court is the Gilstrap case. These cases were all before Mr. Justice Wright. They were all cases in which he was concerned; and he finally gives judgment on the subject exactly upon the very point in the Gilstrap case.

Mr. Balfour Browne: But Lord Justice Vaughan Williams is not bound by Mr. Justice Wright; and he said "past and future." Then there is Sir Frederick Peel's judgment that the claim can go back to the passing of the Act—not before the passing of the Act, he said. Therefore I will ask you to come to the conclusion that we are entitled to look back with regard to these charges, if they were illegally made.

Justice Lawrence: If they were illegally made, Sir Alfred Cripps admits it; but illegally made in that sense is a different thing from you being entitled to a rebate or allowance.

Mr. Balfour Browne: I think if I can show, as was admitted in the old Birmingham case, that there was a terminal in the rate, I am entitled to succeed, and to go back certainly six years in the claim that we make.

Justice Lawrence: I cannot see how, in the teeth of a section which says that they shall be entitled to charge it, it can be an illegal charge, unless and until you have got a case, for example, of undue preference, in which circumstances there would be a judgment for damages *inter se*. That is a different case again; but to say at large, directly the Court decides under section 4 that there is a right to a rebate, that it goes back for six years as an illegal charge, seems to me to be a very bold proposition.

Mr. Balfour Browne: The only way I make it out to be illegal is they charge me for something they do not give. They charge for a station; and they give no station. It seems to me the very first principles of honesty and legality are that they should not charge me for something they do not provide. It is quite clear, under the definition of terminal station, that it is illegal to charge a terminal at my private sidings. They cannot do it. The terminal can only be charged at a terminal station where loading and unloading are done; and if they have charged that at my private siding, it is an illegal act, and they are prohibited by their own Order from doing it. Although I have only dealt at great length with the sidings question on the Midland, your Lordship will understand that my arguments apply with regard to Windsor Street, and the Great Western Company. I did admit that there might be something to be said for the independent sidings at Saltley, which hold forty trucks, as they were exclusively reserved; but they have given up the point of exclusive reservation.

Justice Lawrence: It does not depend, does it, upon exclusive reservation? The services would not be in fact any the less rendered, if the sidings were reserved or not. If they told you you could not have the siding at a certain time, I could understand the argument of exclusive devotion to your service.

Mr. Balfour Browne: Exclusive reservation might be really a foundation of a claim in this way: If a trader said, "I want you to keep this siding for me. Do not let anybody else go on it except myself"—I think in that case there might be a claim for it. But then it must be at our request and for our convenience.

Justice Lawrence: It must clearly be for your convenience, otherwise it would not come within the section.

Mr. Balfour Browne: The Saltley independent sidings are used by the Company; and they only perform their duty to the Corporation when they take the traffic from there and put it over the points into the works sidings. This is what the Sidings Act says they are bound to do. So I have some doubt as to whether these independent sidings are not in exactly the same category as those at Washwood Heath—used, no doubt, by our traffic, just as the rails are used all the way along, and various relief sidings are also used.

Justice Lawrence: What do you maintain the section means, when it says "at or in connection with a siding?" If it does not include such a thing as these independent sidings, what does it include?

Mr. Balfour Browne: It might include a dozen things. If we ask them to lend us an engine to shunt our stuff about the gas-works, or if they took it to the various retorts, there would be a service at a siding for which we should be bound to pay, or in connection with a siding, if we asked them to do anything else—such as convey the coal from Saltley to Nechells for testing purposes. That is a service they should be paid for; and we do pay them 6d. a truck. There is no service at all till they have delivered to me. There is not a word in their Act giving them a right to charge for anything until delivery. It is part of conveyance until they have handed it over to me. I assume that the Railway Company are working their line in the way most convenient to themselves. As to the dispute with regard to waggon-hire on the North-Western Railway, as nothing has been said on the other

side I will ask you to decide that we are entitled to have the waggons at 4½d., instead of 6d.

Mr. ASPINALL: It is a very small point; and we are quite prepared to leave the decision upon it in your Lordships' hands without further argument.

Mr. BALFOUR BROWNE, in concluding his speech for the Corporation, said he claimed that there were terminals in all these services—on coal a terminal of 3d., and on general goods a terminal varying from 6d. to 1s. 6d. It was true that, though in these general goods the traffic was very much smaller, the terminal was very much higher; and there was not any attempt upon the part of any one of the defendants to justify more than 1d. on anything. They did endeavour to justify 1d. on coke. He had already tried to show that this was not justified. They were charging upon coke, as he had shown, 3d.; and they were therefore charging on all the coal that went into Lawley Street Station the same figure, and this, he argued, must be allowed to him as a terminal. Even if he were wrong in this respect, and the Court determined to adhere rigidly to the Pidcock principle, he was still entitled to 66 per cent. of 3d., which was 2d. He also said with reference to coke outwards, as with regard to coal inwards, there was no service performed for the Corporation traffic for which any charge at or in connection with their siding could be made, because all the services were absolutely necessary for conveyance, and were not such as the Corporation could put an end to by any notice to the Railway Company. They could not give them notice, for instance, that they were not to convey the traffic from Nechells to Windsor Street. In order to be a service for the Corporation's convenience, and at their request, it must be one that was done specially for them, and not for everybody, so that they could put an end to it by notice. With regard to the coke rates, he was quite content to leave this to be a matter of account between the parties as to the past; but with reference to the other small matters, he would ask for a decision. He was not sure any question of account arose upon these terminals at all; and therefore to some extent he agreed with his friends that figures were unnecessary. If he had made out that the Company were charging a 3d. terminal, and that they did no service for the applicants, it would be a very simple calculation to ascertain what the Corporation ought to have. He would ask the Court to deal with the question of damages on the various points raised. With reference to the matters which the defendants had promised to adjust, he did not think it was necessary for him to ask for an order; but with regard to the other claims, an order was wanted.

At the conclusion of the hearing, the Court reserved judgment; and it has not yet been delivered.

## RETIREMENT OF MR. W. SMITH OF BOLTON.

At the Meeting of the Gas Committee of the Bolton Corporation on the 3rd inst., Mr. William Smith, the Gas Engineer and Manager, tendered his resignation on account of the condition of his health, and the Committee passed a resolution expressing their regret at accepting it. They added that the valuable services Mr. Smith had rendered for the long period of 23 years called for grateful recognition; and they sincerely trusted he might be long spared to enjoy the leisure he had so well and justly earned.

The matter was referred to by the Chairman of the Gas Committee (Mr. W. Webster) at the meeting of the Town Council on Wednesday. He said he felt Mr. Smith's resignation more acutely than he could express, and he believed the feeling was shared by all his colleagues on the Committee. They were genuinely sorry to lose the services of so efficient and excellent an engineer. The public, too, would be the poorer by the retirement of Mr. Smith, who had served the Corporation faithfully and well for 23 years, saving the borough a large amount of money by his foresight and judicious management. Last year they rebuilt, at the Lum Street works, under Mr. Smith's direction, a commodious retort-house which was stated to be the finest in the kingdom, with larger producing power and healthier conditions for the workmen. This had been accomplished without expense to the ratepayers; the cost having been defrayed out of the reserve fund. A sum of £6000 or £7000 was spent upon the work, which was a credit to their Engineer and to the Corporation. The Gas Committee had been able, owing to Mr. Smith's capable management, to hand over each year large amounts in aid of rates.

Alderman Horridge and several other members of the Council having joined in the expression of regret at Mr. Smith's resignation, a somewhat animated discussion took place in regard to advertising for a successor. The Gas Committee proposed to pay the new Engineer a salary of £600 per annum. Alderman Horridge, however, moved that the minute of the Committee on this subject should be referred back for further consideration, as the amount they suggested was only fixed by the casting vote of the Chairman. Mr. A. S. Wild seconded the amendment. It was pointed out by Mr. Ritson that the Gas Department made a yearly profit of £40,000; and £600 was only 1½ per cent. on this amount. For works like theirs, they required a first-class man; and, in his opinion, £600 was little enough to pay. Mr. J. H. Crook submitted that there was no need to advertise for a successor to Mr. Smith, as they had in their works a man whom they could appoint—a man who had done similar work elsewhere, and who had been very highly commended. Mr. Webster said the sole object of the Committee was to get the very best man they could. If they got a man whose ability was inferior, they might lose a lot of money. It was wise, therefore, that they should offer a substantial salary, so as to attract the best men. On a division, the amendment was carried by 42 votes to 21. The minute was therefore referred back.

At the meeting of the Committee on Friday, the matter was reconsidered; and it was finally decided to advertise for a Gas Engineer at a salary of £500 per annum, rising by £25 a year to £600.

During last year no fewer than 1704 florins and 232 half-crowns found their way into the slot meters of the Manchester Corporation.

## IMPERIAL CONTINENTAL GAS ASSOCIATION.

**The Half-Yearly Ordinary General Meeting of the Association was held last Tuesday, at the Cannon Street Hotel, E.C., Mr. J. HORSLEY PALMER in the chair.**

**The SECRETARY (Mr. R. W. Wilson) read the notice convening the meeting; and then the report of the Directors, as follows:—**

The Directors have the pleasure to report that the results of the second half of the year 1908 have been, on the whole, satisfactory.

The profit of the half year was £232,959. This, added to the sum of £33,289 brought forward from the preceding half year, makes a total of £266,248 available for dividend, pension reserve, &c., as compared with that of £263,411 for the corresponding half year of 1907.

The quantity of gas sold in the half year under review shows an increase at the rate of 6·1 per cent. The average gross cost of the 528,431 tons of coal carbonized in the half year was 19s. 2·24d. per ton of 1000 kilogrammes, or 0·44d. less than in the corresponding half year of 1907. The value derived from the sale of coke showed an increase, as also, to a slight extent, did the revenue from the sale of ammonia products; but the value of the tar showed a slight decrease. The number of meters placed on Dec. 31, 1908, was: Ordinary, 393,676; prepayment, 125,049—together, 518,725. These figures represent an increase of 28,003 ordinary, and 20,322 prepayment meters in the year—together 48,325. The number of consumers on the books at the end of the second half year of 1908 was 428,169—an increase of 41,909, or at the rate of 10·85 per cent. on the figures of the corresponding half year of 1907. The total length of mains laid on Dec. 31 last was 2324 miles—an increase of 117 miles since Dec. 31, 1907. The plant and mains were maintained in their usual efficient condition.

The plant of the Aix-le-Chapelle station, having become somewhat out of date, and barely sufficient for present requirements, it was thought desirable to build a new retort-house with twenty furnaces, each of ten vertical retorts, and the contracts for this work were given out.

At Antwerp, the new works at Hoboken were brought appreciably nearer completion. The retort-house, benches, coal store, purifiers, and second gasholder of 2½ million cubic feet were completed. The difficulties connected with the construction of the quay (referred to in the last report) were successfully overcome; and the quay, pier, and jetties were completed. The construction of the coal-cranes and conveying-plant was proceeded with.

A contract was concluded with the Commune of Hemixem, in which a portion of the Association's Hoboken property is situated, for the exclusive supply of gas up to the year 1936.

The foundations for the steel tank to contain the new 5½ million cubic feet gasholder at Schöneberg, Berlin, were completed; and the contract for the erection of the holder was let to the Berlin Anhaltische Maschinenbau Aktien-Gesellschaft. The erection of the six new vertical retort settings at Mariendorf (referred to in the last report) was completed, and the furnaces were put in action. The erection of a third retort-house on this works, to contain fourteen settings of twelve vertical retorts each, together with the necessary interior and exterior coal and coke conveying plant, was proceeded with.

At Brussels progress was made with the erection of a new retort-house with twelve furnaces of ten vertical retorts each. Owing to the extension of the business at this station, the offices in the Chaussée d'Ixelles had become inadequate to our requirements, and advantage was taken of a favourable opportunity to acquire Nos. 42 and 44, Rue de l'Arbre Bénit—two houses situated at the back of the Association's offices—which will enable the necessary extensions to be carried out. The Association's monopoly for the supply of gas in the Commune of Berchem State, Agathe, situated to the north-west of Brussels, was prolonged for a period of sixteen years, until 1940; and the exclusive concession for the supply of electric current in that Commune was secured up to the same date. It having been decided, in view of the demand for lighting by electricity which has arisen in several of the suburban communes with which the Association has gas and electricity contracts, to erect an electricity station for the production and supply of current, a suitable site for such works was acquired at Droogenbosch, south of Brussels, situated on the Charleroi Canal, and having also a connection with the railway.

At Flushing, the new three-lift 127,000 cubic feet gasholder (referred to in the last report) was completed.

At Frankfort, the twelve furnaces of vertical retorts, with coal and coke handling plant, also mentioned in the last report, were finished, and put in action.

At Evreux, one of the towns in France supplied by the Compagnie Continentale du Gaz, an exclusive gas contract was concluded with the authorities of the suburb of Gravigny for 35 years, until 1945.

A contract until 1948, without monopoly, was also concluded with the authorities of Bourg-de-Thizy, adjoining the town of Thizy, another of the group of stations belonging to the Compagnie Continentale.

In conclusion, the Directors desire to draw the attention of the Proprietors to the accounts for the half year ended Dec. 31 last, and to the balance-sheet (a copy of which was appended to the circular calling this meeting). These have been duly audited; and from them the Directors have, in accordance with the provisions of the Companies' Clauses Consolidation Act, prepared a scheme showing the profit of the Association for the half year, and the portion thereof applicable to the purposes of dividend, which they recommend now to be declared—viz., a dividend of 4 per cent. for the half year ended Dec. 31, 1908, payable free of income-tax on and after Tuesday, the 11th May next.

The Directors who go out of office by rotation are: John Horsley Palmer, Esq., Hon. Sir E. Chandos Leigh, K.C.B., K.C., and Robert Tindall, Esq. These gentlemen are eligible for re-election, and offer themselves accordingly.

The Auditor who goes out of office by rotation is Joseph Gurney Fox, Esq., who is eligible for re-election, and offers himself accordingly.

*Scheme for the Division of the Profits of the Half Year ended Dec.* 31, 1908.

| | | | |
|---|---|---|---|
| Balance brought forward from last half year . . | £33,289 | 2 | 4 |
| Profit resulting from the workings at the stations and dividends on investments, less interest on debenture stock, and the charges on account of depreciation and income-tax . . . . . | 232,958 | 18 | 8 |
| | £266,248 | 1 | 0 |
| Dividend of 4 per cent. for the half year . . . . | £197,600 | 0 | 0 |
| Credit to pension reserve . . . . . | 40,000 | 0 | 0 |
| Balance carried forward to next half year . . . | 28,648 | 1 | 0 |
| | £266,248 | 1 | 0 |

### A NOTABLE FAMILY OF GAS ENGINEERS.

The CHAIRMAN, in moving the adoption of the report, said, before proceeding to make a few remarks on the general aspect of the affairs and business of the Association as outlined in the report just read, he had to refer to the losses by death that had been sustained by the Association since the close of the half year. He especially referred to the death of their Chief Engineer at Aix-la-Chapelle, Mr. James Drory. He was the youngest of that wonderful band of ten brothers who were all engineers, and of whom eight devoted, and some were still devoting, their lives and work to the interests of the Association. He thought it was the most marvellous record that could be stated by a Chairman of any great industrial company, that no less than eight brothers of one family—all great men in their own line—should have devoted the whole of their lives and interests to the same body of shareholders. [Hear, hear.] Mr. James Drory was 42 years in the service of the Association, and, still comparatively a young man, was struck down only a few weeks ago by an attack of pneumonia, when he was absolutely working for the remodelling of the Aix-la-Chapelle station. To him (the Chairman) his death was a great loss. He had been a personal friend of his for 34 years; and it was with the greatest pleasure that he used to visit his station, because Mr. Drory was such a charming, amiable, and intelligent man with whom to have intercourse. His loss was a great one for the Association. He left no children; but his widow had been properly provided for by means of the pension fund of the Association. A curious coincidence with regard to Mr. Drory's record of 42 years' service was that his three brothers who predeceased him—the Chief Engineers at Vienna, Antwerp, and Berlin—had all served exactly the same period of 42 years. The Association had now only left of that splendid family two brothers—the veteran Mr. William Drory, of Frankfort, who had served the Association for 54 years, and the chief of the meter factory (one of the younger brothers) at Berlin The other loss to which he wished to refer was that of the Auditor (Mr. Montagu Somes Pilcher), who was well known to the proprietors, because he had acted on their behalf for a period of twenty years. His death took place just before he was about to audit the accounts for the past half year; and it would be the duty of the proprietors, before the close of the present meeting, to elect someone to fill his place.

### PROGRESS IN THE HALF YEAR.

Now with regard to the report, and the business of the six months, he could hardly remember any half year in which the Directors had had such anxious and strenuous work to undertake, but so little to have to report upon. Serious negotiations had been in progress with large towns on the Continent. But they had not yet been settled; and therefore he had nothing to say to the proprietors about them that day. He hoped, however, six months hence he should be able to enter fully into the details, but he could not do so on this occasion. When they looked at the report, it showed, he thought, that they had been making a great deal of progress in every direction—in the direction of constructing large and important works, in a large extent of main laying, in the production of gas, and, he was thankful to say, in the consumption of gas. The increase in the consumption of gas, as the report said, equalled upwards of 6 per cent., which was rather a remarkable record for an old-established gas company in these days of the fierce competition of the electric light. Progress, too, had been made in the number of their consumers. The increase of consumers, owing to the way in which their local agents and engineers pushed the business, had been of the most satisfactory nature. Likewise, they could congratulate themselves on the satisfactory increase in the profits of the concern. Going a little more into detail, the 6 per cent. increase in the consumption of gas perhaps conveyed little to the minds of the proprietors; but he might state that it represented an additional carbonization of no less than 30,000 tons of coal. This would give the proprietors some idea of the increase in the manufacturing part of the business.

### THE ABANDONED GAS AND ELECTRICITY TAXES.

There was another thing they had to be very thankful for; and it was that the gas and electricity taxes which had been put forward by the German authorities had been definitely dropped. The Chairman pointed out that the Association were protected by its contracts, inasmuch as they had the right to increase the price of gas to the consumer by the amount of any tax of the kind. But, naturally, the imposition of such a tax would have had a very prejudicial effect on the progress of gas and electric lighting. And besides, the suppliers themselves—the Association at their stations—would practically have had to collect the tax; and there was no doubt that serious difficulties and friction would have arisen between themselves and the consumers, if such an unpleasant job had been put upon them. Therefore, he was exceedingly thankful the German Government had dropped the suggested tax on gas and electricity. (Applause.)

### PRICE OF COAL.

With regard to coal, the proprietors had noticed in the papers there had been a considerable drop in the price of coal; but the business of the half year under review did not benefit wholly by the reduction. Certainly the net cost of the coal came out about 5½d. per ton less than in the corresponding half year; and as the quantity of coal carbonized in the half year was 528,000 tons, the lower price had helped in no contemptible degree in raising the profit. It amounted to something like £12,000. Of course, in the future, they would hope to get more profits from the coal, because they had entered into contracts which represented a reduction of something like 1s. 8d. per ton for the year 1909-10. (Applause.) "Pray," he remarked, "do not be too elated, because when the price of coal goes down, the price of coke equally falls, so it will not be all profit in our pockets."

### PUSHING OUT INTO THE SUBURBS.

To give some idea of the way in which the business was extending, he said they had during the past half year laid something like 80 additional miles of mains in new districts; and, during the whole year, 117 miles were laid. On this he might say one word as to the policy of the Board. In all the great towns the Association lighted, it had been the policy of the Board to conclude contracts as much as possible with the suburbs. It was to these suburbs they had to look in the future—not in the present—for profits; and it had always been the policy of the Board to look far in advance, so that they might hope the Association, which had existed now for something like 87 years, might have a long and prosperous future, to be enjoyed by those who would come after them. This was the policy they had always adopted. It was a policy that did not bring in any immediate profits on these miles of mains, but, he ventured to predict, it would produce a very prosperous business in the future.

### CAPITAL EXPENDITURE AND NEW WORKS.

The allusion to all this main-laying and constructive work brought him to the question of capital expenditure; and it had been very heavy in the past half year. The item in the balance-sheet to Dec. 31 last, under the head of works and mains, indicated an increase of nearly £200,000, as compared with the half year ending June 30, 1908, or an increase compared with the corresponding half year to December, 1907, of no less than £265,000. This had been principally expended at Hoboken—the new works that were being built for Antwerp. They were now approaching completion, and would be put into action during the coming winter. The estimated cost of these works, without land, was £238,000. Of this sum, they had already spent £170,000; and there still remained to be paid about £68,000. Then, of course, they had had to expend a great deal of money at other places—especially at Berlin and Frankfort; and they were contemplating the remodelling of the works at Aix-la-Chapelle, which would cost about £60,000. So it would be seen that, in the immediate future, they would have to spend a large sum of money for capital purposes; and he thought it would work out to nearly £500,000.

### THE RECENT DEBENTURE ISSUE.

The reference to al this capital expenditure brought him naturally to the balance-sheet. In it there appeared for the first time an additional £761,400 of 3½ per cent. debenture stock, which was issued in August last. He thought the proprietors would agree with him, after the figures he had given with regard to capital expenditure, that the Directors were amply justified in making this issue. It would be seen that the debenture stock had now been brought up to a total of £1,235,000, as against £473,600 a year ago. The new issue having been made on Aug. 1, five months' interest on the new stock had to be included; and this interest now amounted to £18,062, compared with £6906. The other figures on the liability side of the balance-sheet remained much the same. On the assets side, works and mains, as he had already stated, showed an addition of £265,000, and on land the account had been increased by the sum of about £30,000.

### GAS COMPANIES AS ELECTRICITY SUPPLIERS.

With reference to this latter increase, he should like to say a few words about another part of their business. The proprietors knew the Association were principally gas producers; but they had also a branch of lighting by electricity. In the suburbs of Brussels, where they had a large and extensive area to light, there had arisen a very considerable demand for electric light; and under their contracts there, they were entitled to supply electricity. It was manifest to the Directors that, in the immediate future, there would be a very considerable call for electricity both for lighting and power. They had two small stations there at which they could not produce electricity very economically; and therefore they looked about for a piece of land where there was both a good water supply and railway accommodation, on which they could erect a proper central electricity generating station. Some 33 acres of land were purchased in an exceedingly good situation, at a reasonable price; and there they would put up the electricity station. Such a large quantity of land was purchased, because it was evident to the Directors that, in a very few years, they would require another considerable gas-works to do the business in Brussels and the suburbs.

### OTHER FEATURES OF THE ACCOUNTS—COAL STOCKS AND SEVERE WEATHER.

Then with regard to stocks, the increase seemed to be very large compared with a year ago. It was £112,000. This considerable addition was chiefly attributable to the heavy stocks of coal held at several of the larger stations. In 1907, owing to difficulties on the railways and at the mines, the Association was reduced to the pitiable state of having only three weeks' supply of coal at Vienna. This year precautions were taken that this sort of thing should not occur again. The result was that on Dec. 31 the increased value of the coal stocks at Berlin was £74,000; at Vienna, £13,000; and at Brussels, £4000. He was very glad the Directors took these precautions, because immediately after the close of the year the Continent, more especially North Germany, was visited by tremendous snow storms and severe frosts; and the railways and canals were entirely blocked. And not only so, but when the snow melted, there were such serious inundations that the railways were much disorganized. It was a fortunate thing the Association had these immense stocks of coal at Berlin and other places. Since the close of the half year, these great stocks had been reduced, as well as the stocks of coke. Then as to "Cash at stations." This was a matter of finance. The item was £47,000 greater than on Dec. 31, 1907. The Directors were able to obtain satisfactory rates of interest from their bankers in Berlin and Vienna; and therefore it was considered advisable to have substantial sums of money on deposit there, to meet future commitments, rather than bring the money over to London, and then have to remit it back again, and probably incur loss on exchange. This was a matter that would be readily appreciated by business men. "Cash in London" was nearly £28,000 more. This was accounted for by a loan being repaid on Dec. 31, and lent again on Jan. 1. The item of "Sundry debtors at stations" was larger; but he did not think it was any larger than corresponded with the general increase of the business. It might be interesting to the proprietors to know that, in the course of the year, the bad debts amounted to under £2000; and when they came to think that the gross cash they had to handle approached very nearly 3 millions of money in the course of the year, he did not think £2000 was by any means excessive for bad debts.

THE PROFITS AND THEIR DIVISION.

The balance-sheet showed that the profit was £232,958. This was a decrease, compared with the corresponding half year, of £4600; but it was obvious to anybody who looked carefully into the balance-sheet, that this was more apparent than real. The Directors had decided that the expenses in connection with the recent issue of debenture stock should be written off over a period of three half years. The total amount of such expenditure, as indicated in the balance-sheet, was £64,653; and therefore a sum of £21,554 had been provided. The deduction of this amount from the revenue account resulted in the profit of the half year exhibiting the decrease he had mentioned. Consequently the true increase in profit amounted in round figures to £17,000, or at the rate of 7 per cent., which corresponded very closely with the increase of 6 per cent. in the gas sold. With regard to the division of the profits, the Directors were running on exactly the same lines as in former half years. They proposed to pay a dividend of 4 per cent., credit the pension reserve with £40,000, and then carry forward a balance of £28,648. He had on previous occasions pointed out the fact that it was absolutely necessary for the Association to have a very large pension reserve; but for the benefit of new shareholders, he should like to quote a few facts and figures with regard to the pensions, and also the contributions the Government put upon them for Government insurance funds and workmen's sick pay, which were obligatory in most of the countries in which the Association worked, and which were being perpetually added to. In 1907, the Association paid in pensions to the staff and workmen £34,700. This year it had increased to £35,800; and the workmen's sick pay and the contributions to the Government insurance fund was this year £14,300, against £12,600. Therefore, the total increase in this one year came to £2764 or a total of £50,143. He could hardly believe, after giving these figures, there would be a single dissentient voice to the adding of a considerable amount to the pension fund.

DONATIONS.

There were one or two small matters which had not been mentioned in the report to which he thought it his duty to refer. The Directors had made three donations in the last few months of which he believed all the proprietors would approve. In November last, there was a very disastrous explosion in one of the Westphalian coal pits, from whence the Association derived a large proportion of their German coal. A number of miners lost their lives, and a great deal of distress was caused. The Directors therefore thought it well to send through their agent for Germany—Mr. L. Delbrück, a well-known banker in Berlin—a donation of 5000 marks, or £250, to the fund which was being raised by their Royal Highnesses the German Crown Prince and Princess. He had already alluded to the disastrous inundations following the severe storms in the winter when a great many people suffered. The Association most fortunately escaped, through the energetic arrangements made by their Chief Engineer at Frankfort and their Chief Engineer at Hanover, to prevent the works from being flooded, which event would have been most disastrous. The Association contributed £250 to the fund which was raised for the sufferers from these inundations. Then the third donation was an English one. He thought there were few shareholders of any gas company who did not know the name of Sir George Livesey, the late Chairman of the South Metropolitan Gas Company. He (the Chairman) did not think there was any necessity for him to enlarge upon the debt that every gas manufacturer and every gas company owed to Sir George as one of the most able, energetic, and far-seeing defenders, and promoters of the use, of gas in this and foreign countries. A fund was opened some time ago to commemorate the work of this great representative of the gas industry; and the Board, although the Association did not actively carry on business in the British Isles, thought it right to contribute the sum of £250 to the memorial which was being raised. (Applause.)

The DEPUTY CHAIRMAN (Mr. Arthur Lucas) seconded the motion.

Sir JOHN RUNTZ congratulated the Directors and proprietors generally upon the excellence of the report. Those who had attended the meetings of the Association for a number of years (he himself had attended them for between 30 and 40 years) had heard year by year the tale of continued prosperity. He emphasized certain of the figures presented by the Chairman, and repeated the suggestion made by him a few meetings since as to investing surplus cash in Colonial inscribed stocks, in which there was not the fluctuation that there was in other gilt-edged securities.

The CHAIRMAN said it might interest Sir John to know that temporarily the Directors had invested some of the Association's surplus funds in Canadian 3½ per cent. bonds, New South Wales Railway Stock, and Straits Settlements 3½ per cents. This he repeated was only a temporary investment, because the whole of the debenture issue would soon be swallowed up in capital extensions.

The motion was unanimously carried.

Proposed by the CHAIRMAN, and seconded by the Hon. Sir E CHANDOS LEIGH, K.C.B., K.C., a dividend of 4 per cent. was declared on the £4,940,000 stock of the Association, free of income-tax. The Chairman mentioned that the additional 2d. on the income-tax meant that they would have to pay £5150 more to the Chancellor of the Exchequer.

Moved by the CHAIRMAN, and seconded by Mr. J. H. BIRCHENOUGH, C.M.G., the Hon. Sir E. Chandos Leigh, K.C.B., K.C. (who has been a Director for eighteen years), was unanimously re-elected.

Proposed by the CHAIRMAN, and seconded by Mr. CORBET WOODALL, Mr. Robert Tindall (who has been a Director for sixteen years) was also re-elected.

The DEPUTY-CHAIRMAN proposed the re-election of Mr. J. Horsley Palmer. In doing so, he remarked that for no less a period than 34 years Mr. Palmer had sat at the Board; and out of this time he had been six years Chairman of the Company. The Association had been fortunate during this long period to have the advantage of his guidance; and it was a pleasure to place on record publicly what he and his colleagues felt as to how much they owed Mr. Palmer for his continuous and able services.

The Hon. Sir E. CHANDOS LEIGH, in seconding the motion, endorsed the observations of the Deputy-Chairman.

The motion was heartily passed.

The CHAIRMAN, in his acknowledgment, said it had given him not only pleasure to work for the Association, but, owing to family connections ever since the Association started, to serve the Association had also been with him a matter of family honour.

Moved by Sir JOHN RUNTZ, seconded by Mr. L. C. CALLEY, the retiring Auditor (Mr. J. Gurney Fox) was re-appointed.

Mr. FOX, in the course of his reply, said he should like to refer to the loss of his colleague, Mr. Pilcher. The zeal and earnestness ever shown by him was only equalled by the invariable kindness that he (Mr. Fox) always received from him. He had lost a friend; the Company, a sound auditor.

Mr. W. CLEVERLY ALEXANDER proposed, and Mr. BERNARD F. HARRIS seconded, that Mr. Theodore Bromhead Bassett be elected to fill the vacant auditorship.

The motion was unanimously agreed to.

Mr. BASSETT having acknowledged it,

On the proposition of Mr. A. F. PHILLIPS, seconded by Mr. SAMUEL SPENCER, the Chairman and Directors were heartily thanked for their services.

Mr. CORBET WOODALL said he knew the proprietors would not grudge him a minute or two in receiving and adopting the resolution he had to propose. The circumstances to which the Chairman had given eloquent expression in the opening of his speech made this resolution of particular interest that day. They had lost one of their respected engineers—a member of a family who had done a great deal to establish the good repute in which the Association was held, and had been held for many years, on the Continent. It was satisfactory, however, to know, while they had lost so many members of the family, that there had grown up others in their places who were carrying on the good traditions in an equally satisfactory manner. The services rendered by their staff were peculiar and great. The amount of trust that had to be reposed in men so far away was considerable; but it had never, in his experience, been misplaced. The men they had in their service, both as agents and engineers, on the Continent were men of whom any company might be proud. He had much pleasure in proposing that a vote of thanks be given to their able Secretary (Mr. R. W. Wilson) and his staff, and to all the officials and their staffs on the Continent.

Mr. L. R. WILKINSON seconded the motion, which was heartily carried.

This concluded the proceedings.

## BUENOS AYRES (NEW) GAS COMPANY.

### Amalgamation of the Three Companies.

The Annual Meeting of this Company was held last Thursday, at No. 1, East India Avenue, E.C.—Mr. J. C. IM THURN in the chair.

The SECRETARY (Mr. J. M. Macmorran) read the notice convening the meeting; and the report and accounts were taken as read.

The CHAIRMAN moved the adoption of the report and balance-sheet, and the declaration of a dividend at the rate of 7 per cent. (free of income-tax), 3 per cent. of which has already been distributed. In doing so, he said he was pleased to be able to meet the shareholders with what might be considered to be a very satisfactory report and balance-sheet. It would be recollected that last year he mentioned in his speech that the Directors had been negotiating with the municipal authorities. These negotiations had been going on ever since; and the past year had been a very arduous one for all three of the Gas Companies operating in Buenos Ayres. Mr. Bowen, the Chairman of the River Plate Gas Company, at their meeting on April 23, and Mr. H. E. Jones, the Chairman of the Primitiva Company, at their meeting on the previous Friday, both told their respective shareholders what close and anxious attention had had to be given to the negotiations with the Municipality, in order to obtain equitable and fair treatment; and it was with very considerable relief that he himself was able to state that an *ad-referendum* contract was signed by the Intendente (Lord Mayor) on the 22nd ult. This *ad-referendum* contract, after being confirmed by the Municipality, would, of course, require confirmation by the shareholders of the respective Companies; and the Directors trusted, ere long, to be in the position to call the shareholders together for the purpose. He must add, for the information of the shareholders, that, in order to give time for a permanent agreement, a temporary arrangement was made between the Companies and the Municipality, by which the price to be charged until the end of the current year was 22 cents, or (say) a reduction of 2 cents on the previous price of 24 cents per cubic metre. This, of course, only affected the accounts of the last three months of the year under review; but it would affect the whole of the current year. The Boards of the three Companies had acted in complete agreement, and had at all times taken common action for the protection of the interests of the shareholders. These constant meetings had paved the way to negotiations for amalgamation; but at the present time he was unable to state more than that the three Companies had gone a long way towards finding a satisfactory basis. He could assure the shareholders that it had been a very anxious time for the Directors; and he could heartily endorse what Mr. Bowen had said, that they would be very thankful indeed when the arrangements with the Municipality had been satisfactorily concluded. As he had before stated, the Directors would take the shareholders into their confidence when the time came; but he should be greatly obliged if they would, at this period of the negotiations, abstain from asking questions, which, in their own interests, it might be undesirable to answer. During the past year, many improvements had been carried out. There had been built a new retort-house complete with mechanical stoking and discharging apparatus of the most up-to-date kind. They had also erected a new gasholder, with a capacity of a million cubic feet. The new retorts had been at work for some little time, and were giving the greatest satisfaction; and the Directors daily expected to hear that the new gasholder was in use. In addition to this, the whole of the mains inside the works had been revised and renewed. Their Engineer (Mr. W. Angus) had brought about many changes, which had resulted in great economies, and were likely to effect considerably more. He (the Chairman) was glad to be able to say that the works were now very up-to-date and complete.

Out of the year's revenue, £27,946 had been expended on the upkeep of the works, mains, &c.; and the sales of gas had increased. During the year, they had lit 7777 public lamps—being an increase of 94 over the previous year. The number of gas-stoves in use at Dec. 31 was 5754, being an increase of 677 over the preceding year. Coal had cost 2s. 7d. per ton less. The Directors had sent out with the report and balance-sheet, a copy of the South Barracas report and balance-sheet for the same period. The results of that Company had been satisfactory, and would, they hoped, continue to improve now that the Water-Works Construction Syndicate, which was satisfactorily started at the end of last year, had begun constructing operations, and the erection of the plant and mains was being pushed on with all speed. Turning to the accounts, he would take the net revenue first. The profit for 1908 was £67,771, as against £54,634 for 1907. The interest on investments was £7510; and the profits other than trading were £13,809. With respect to this last item, it would be remembered that the Company assisted in forming the Bahia Blanca Gas-Works (Construction) Syndicate, Limited, and that the "A" and "B" shares so acquired were exchanged for similar shares in the Bahia Blanca Gas Company, on the terms and in the proportions then arranged—resulting in a holding of 1000 £5 "A" shares and 12,500 £1 "B" shares, at a net cost of £5000. A portion of these "B" shares were sold, and the remainder (5000) taken into account at face value (£1). Their holding on Dec. 31 last was 1000 £5 "A" shares and 5000 £1 "B" shares; but since then further sales had been made, as and when the Company needed funds; and their holding that day was 400 "A" and 4500 "B" shares. The Directors had thought it well to set out these figures in detail, so as to show the actual trading profits for the year; and the shareholders would notice that the Board transferred the profits other than trading to reserve funds, along with some £21,000 from revenue. Shareholders had doubtless been asking themselves why the Board had not recommended a larger final dividend, and had placed so large a sum to reserve. The reason was this: The shareholders would have gathered from his previous statements that the amalgamation of the three Gas Companies in Buenos Ayres was being considered. In such an event, this Company would retain its South Barracas holding, taken at par, as part of the purchase consideration. To effect this, it was necessary the reserves should be equal to their holding. Now, as the shareholders were aware, the business of the South Barracas Company had been increasing; and they had had to provide the funds for that. Thus at the end of 1907 their own Company held £150,000 of South Barracas shares, while their reserves were a little over £100,000—the balance being supplied from other sources. Now—at the end of 1908—by carrying the extra profits to reserve along with the £21,000 from revenue, they had a clean holding of £150,000 in South Barracas shares, outside their business, which shares (in the event of amalgamation) would be distributed *pro ratâ* to their respective holding among the shareholders. Had the Directors recommended (say) an extra 1 per cent. dividend out of these outside profits, they would have been that much short in their South Barracas holding. In other words, they could not have it both ways. Turning to the balance-sheet, it would be noted that the property of the Company had been written up by £54,943. This was done early last year at the request of their Local Committee, who, in the then state of negotiations, considered it necessary to agree these figures with those laid before the Municipality. The negotiations had taken a different turn since; and this figure was now immaterial—being a mere book entry (as would be seen by the *contra*). The Directors, however, left it as approved by the Auditors, to whom the matter was submitted. The figure at Dec. 31, 1907, was £708,940, adding to which the appreciation £54,943, and additional expenditure during year £48,621, gave the present figure of £812,504. The item of service-pipes, &c., had been increased by £8109. The stock of coal, &c., stood at £82,043, against £70,378 in 1907. Sundry debtors were about the same. The amount owing by the South Barracas Gas Company (£41,172) had since been paid off by the Company. Sundry creditors were heavier by reason of their heavy capital expenditure and advances to the South Barracas Gas Company. In this connection, he desired to point out that, had not the amalgamation negotiations come suddenly to a head last March, the Board would have asked the shareholders to authorize a further increase of capital to cover the additional capital expenditure already incurred by reason of the necessities of the expanding business. Probably the shareholders had seen from the papers of the strikes now going on. He had not heard that they had affected the Company. He did not suppose they would do so. They had in their Engineer (Mr. Angus) a man who was, owing to his temperament, extremely well able to deal with any difficulties that cropped up in this way; and the Local Committee and Local Manager (Mr. Mariano Obarrio) would afford him any assistance he was likely to require.

Mr. Ross Pinsent seconded the motion, which was unanimously adopted.

The Chairman, in moving the re-election of Mr. F. J. Heseltine, read a letter from him, in which he said it was with some hesitation that he offered himself for re-election owing to indifferent health; but from his long connection with the Company—some 34 years—his intimate knowledge of the past and present position of their affairs might be of some service in the contemplated amalgamation of the Companies.

Mr. F. C. im Thurn seconded the motion; and it was cordially passed.

Proposed by the Chairman, and seconded by Mr. Ross Pinsent, Mr. F. C. im Thurn was also re-elected.

On the motion of Mr. Samuel Spencer, seconded by Mr. Pilley, Messrs. Turquand, Youngs, and Co. were re-appointed Auditors.

Votes of thanks were heartily passed to the Local Committee and Manager, to the Secretary, and the Engineer, and their respective staffs for their services during the responsible times through which the Company had been and were passing; and with equal cordiality the Chairman and Directors were also thanked.

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At the meeting of the London County Council last Tuesday, estimates of expenditure of £4575 for gas testing and £9210 for meter testing in the current financial year were approved.

## GAS, WATER, AND GENERAL INVESTMENT TRUST.

There was small satisfaction for the shareholders to be derived from the report which was submitted at the annual meeting of the Gas, Water, and General Investment Trust, which was held last Thursday, at Winchester House. It will be remembered that at the previous meeting a Committee was appointed to confer with the Board in regard to the existing unsatisfactory state of affairs; and it was arranged that they should subsequently make the shareholders acquainted with their views. This they did; and the various conclusions at which they arrived were published in the "Journal" for June 16 (p. 714).

In the report which the Directors submitted at the meeting last week, it was stated that, after providing the interest on the debenture stock, special expenses amounting to £633, and expenses of management, there was a loss for the year ended Jan. 28 of £5528, which had been deducted from the amount brought forward from the previous year, leaving a balance of £8474 to be carried forward. The decrease in revenue was accounted for mainly by the fact that the previous year's revenue included sums amounting to £11,420, being a final dividend on the Company's holding in the City of Wellington Electric Light and Power Company, Limited, and the final instalment of the sum received by way of commission from the Utah Light and Railway Company. No credit had been taken to revenue on account of securities received in lieu of dividends. There still existed a heavy depreciation on the cost price of the Trust's investments; and loans advanced included some which were of doubtful value. The expenses of managing the Trust had been reduced by about £580; and arrangements were being made which would result in further reduction during the current year. The Directors were steadily pursuing the policy outlined in the Committee's report. The loans owing by the Trust at Jan. 28 stood at £155,592, showing a reduction of £36,843. During the year the entire investment of the Trust in the City of Wellington Electric Light and Power Company had been liquidated, resulting up to the present time in a profit of £2553. The Trust's holding in the United Railway and Trading Company, Limited, continued to be a source of grave anxiety. It may be mentioned that, accompanying the Directors' report, was a list of the securities held by the Trust on Jan. 28; and of this investments in gas and water undertakings formed quite a small proportion, the Board having apparently laid out most of the funds under the third heading of the Trust's title—namely, "General Investment."

In moving the adoption of the report, the Chairman (Mr. J. B. Braithwaite) said the policy of reducing the outstanding liabilities had been consistently pursued during the past year. Twelve months ago, the loans stood at £192,212; while at the date of the last balance-sheet they had been reduced to £155,323. At the present moment they showed a further reduction of something like £25,000; but, of course, this policy had been pursued to some extent at the expense of revenue. The Board had not at present worked out any scheme for the reorganization of the capital of the Trust, though this was one of the things that would have to come forward in the near future. He was in hopes that within the next twelve months they would be able to put an approximate value on their investment in the United Railway and Trading Company; and then the placing of the capital on a sounder basis could be proceeded with. There were considerable changes in the revenue account. He had previously told the proprietors that they could not hope to reinvest the money received from the City of Wellington Electric Light and Power Company to give them anything like the return they were getting from that. The sale, however, had resulted in a small profit over the price at which the undertaking had stood in the books of the Trust; and possibly there would be a little more to come, as the liquidation had not yet been completed. The revenue account had also been made up in a somewhat different manner, in deference to the views of the new members of the Board; and this had depleted the revenue to the extent of £2500. The expenses of management had been reduced from £2800 to £2221; and it was hoped that other changes would effect a further reduction of £600 or £700 in the current year. They still had a carry-forward of between £8000 and £9000; and they had also their revenue from suspense account securities. The position had certainly improved since they met a year ago. He had felt rather bound in honour to the stockholders to retain the chair during the past year; but he would be extremely glad now to resign it, in favour of one of the gentlemen who had been recently put on the Board as nominees of the shareholders.

Mr. G. T. Moody (one of the new Directors the Chairman had referred to), in seconding the adoption of the report, said the revenue account had not "been depleted;" but in past years amounts had been improperly credited to it. Perhaps, however, the main cause of all the trouble had been the large number of extremely speculative and hazardous securities that the Trust had invested their money in. At the present moment money had been lent to the extent of £78,000 in various loans; and on these loans not one penny of interest in cash was received last year. In many cases he feared the loans were absolutely bad. These troubles had arisen owing to the Board having no knowledge whatever of the way in which a trust company should conduct its affairs. He thought the only thing was to ask Mr. Braithwaite to retire from the Board altogether. With regard to the £250,000 invested in the United Railway and Trading Company, the accounts of that concern had not been made up later than 1906; and he could only conclude, when a company deferred making up their accounts for such a long time, that there was some considerable loss to face which they did not wish to disclose.

Mr. Cooper, a member of the Shareholders' Committee, said the present position of affairs was entirely due to the maladministration of the old Board. They had had over a million of money to deal with, and twenty-one years to do it in; and they had succeeded in losing half the money. The reckless policy pursued, of placing large amounts of the Trust's money in extremely speculative securities, could have no other result than ultimate disaster. Had the Committee been appointed years ago, thousands of pounds would have been saved to the Trust.

After a good deal more discussion, a show of hands was taken as to whether Mr. Braithwaite should resign the chairmanship of the Trust; and the majority of those present expressed themselves in favour of his retaining the position. The report was then adopted.

## SOUTHAMPTON GAS COMPANY.

The Half-Yearly General Meeting of this Company was held last Wednesday—Captain A. J. CORSE-SCOTT, J.P., in the chair.

The ACTING-SECRETARY (Mr. Frank Lewis), having read the notice convening the meeting, the report of the Directors for the six months ended the 31st of December was presented. It showed a sum of £14,951 available for distribution; and the Directors recommended the payment of maximum dividends on the ordinary stock for the half year, less income-tax. These would amount to £13,421, and leave £1530 to be carried forward.

The CHAIRMAN, in moving the adoption of the report, said it afforded him very great pleasure to do so. The usual maximum dividends would be paid, and there would be a balance of £1530 to go to the current half year. Notwithstanding the mildness of the past autumn and winter, the Directors were pleased to report an increase of 7,052,000 cubic feet of gas sold in the half year, compared with the corresponding period of 1907. Moreover, the extended adoption of incandescent gas lighting, more especially the inverted burner, had led to economy in consumption, at the same time adding to the beauty and efficiency of gas lighting. The total sales of residual products had realized less in the past half year than in the corresponding period of 1907. A similar result, however, had been experienced by gas companies generally. Gas continued to be held in high favour, as was amply demonstrated by the addition since the last meeting of 540 prepayment and 286 ordinary consumers. Not only as an illuminant was gas as popular as ever, but its requirements for heating and cooking had resulted in 70 extra cookers, 142 gas-fires, and 172 gas-steam radiators being fixed during the six months covered by the report. The contract for the sale and purchase of land at Redbridge for a distributing gasholder in connection with the supply of gas to Lyndhurst had been signed; and the Directors hoped shortly to be in possession. The Southampton Corporation had recently decided, without discussion, to displace 430 gas-lamps (one-fourth) in the side streets by electricity, on the faith of their Electrical Engineer's assertion that similar displacements had taken place in other towns. He undertook to charge the same price for his illuminant as that paid for gas, which, it was beyond argument, could not be done at a profit. This course, he might say, was taken without affording the Directors any opportunity of conferring with the Corporation on the subject. There had been no complaints against the public lighting by gas, and the Board naturally regarded the action of the Corporation with surprise, as the Company had hitherto been on most friendly terms with the Council in this matter. They felt that the members of the Corporation could not have been in possession of any reliable information as to what was happening elsewhere; and therefore they had prepared and despatched to each Councillor, as well as to the Borough Engineer and Borough Electrical Engineer, important facts bearing upon the subject of gas *v.* electricity. In a letter recently received from the Town Clerk, the Directors were given to understand that, after the foregoing number of lamps had been adapted to electricity, the greater proportion of public lighting would still be by gas. Mr. E. W. H. Eady, who had been Secretary of the Company for the past five years, had been compelled, on account of continued serious illness, to tender his resignation, which he (the Chairman) need hardly say had been accepted by the Directors with regret. As a practical recognition of Mr. Eady's 33 years' faithful and efficient service, the Board had decided, subject to the approval and sanction of the stockholders, which he hoped would be unanimously given, to grant him a retiring pension of £300 per annum. Quite recently the Directors made one of their periodical inspections of the Company's works, which they found in excellent condition. He concluded by congratulating the stockholders on the close of yet another successful half year.

The DEPUTY-CHAIRMAN (Mr. J. C. Moberly, M.A.) briefly seconded the motion.

Mr. PARSONS referred to the way in which the Corporation were extending the electric lighting in the Shirley district, and remarked that theirs was not the only opposition the Company had to face, as the previous day a Committee was appointed to inquire into the subject of lighting the South Stoneham Workhouse otherwise than by gas. A certain air gas had been mentioned as being cheaper and more safe than coal gas; and he should like to hear the opinion of their Consulting Engineer (Mr. Joseph Cash) on the subject.

Mr. CASH explained that the gas referred to was an old opponent in another form. It was dangerous, according to some people, and not so cheap as the public were led to believe. He assured the stockholders there was nothing to fear from the competition of this gas.

The report was adopted, and the maximum dividends declared.

The retiring Directors and Auditor having been re-elected, it was unanimously resolved that a retiring pension of £300 per annum should be granted to Mr. Eady.

Votes of thanks were then accorded to the Chairman and Directors, the Engineer and Manager (Mr. S. W. Durkin), the Consulting Engineer, the Acting-Secretary, and the staff; and with the acknowledgment of these compliments the proceedings closed.

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**Gas Explosion at Doncaster.**—During the making of an excavation for a new 18-inch gas-main in a street at Doncaster, last Tuesday, a leakage from the old main was encountered, and an explosion followed. This caused the sides of the excavation to fall in, and two men, named James Jordan and Joe Robinson, were partly buried by the earth. Efforts were at once made to extricate them; but before this could be done the gas flames threatened the men with death by burning. To prevent this, and to subdue the flames, sand and earth had to be heaped upon them; and over an hour elapsed before one of them could be extricated from his perilous position. First aid was then rendered by a police-constable; and the two men were removed to the Infirmary. Four other men were taken to the Infirmary, suffering from burns about the arms and neck, but after their injuries had been dressed, they were able to leave. It is thought that a spark from a pick caused the gas to become ignited.

## BELFAST CORPORATION GAS SUPPLY.

### Control of the Electricity Undertaking—Question of Discounts.

At the Quarterly Meeting of the Council of the County Borough of Belfast, the following minutes of the Gas Committee were presented:

> At a meeting of the Gas Committee on the 8th ult., it was resolved: "That in view of the fact that the Gas Committee gave the Electric Committee on March 27, 1903, £32,500, and that the Electric Committee, though so far as we know are not making any profit on their business, yet are competing for business, both private and public, against the Gas Committee, who are largely contributing to the reduction of the rates, this Committee desires the Corporation to consider the advisability of placing the electric concern under the Gas Committee, as it was originally." On the 23rd ult., Alderman Sir James Henderson and Councillor M'Mordie, with the Electrical Engineer, attended as a deputation from the Tramways and Electricity Committee as to this resolution, and requested the Committee to authorize the Chairman to withdraw the minute referred to when proposing the adoption of the minutes at the quarterly meeting of the Council. The Chairman thanked the deputation for their attendance. At the meeting on the 16th ult., Alderman Craig brought forward the question of gas discounts, and pointed out that consumers using up to 400,000 cubic feet of gas per quarter on the same premises are entitled to a discount of 15 per cent., while those consuming over that quantity are in receipt of a discount of 20 per cent., in each case provided the account is paid in the gas office within one month from the date of delivery. In order that the rate of discount should be equalized over all consumers, he moved: "That the discount of 15 per cent. be increased to 20 per cent." The motion was seconded by Councillor M'Cusker, and passed by seven to four.

Mr. J. A. Doran, Chairman of the Gas Committee, in moving the adoption of the minutes, said that for some time past the Electrical Engineer had gone out of his way for the sole purpose of taking away the earnings of the Gas Department—the only department which was doing anything towards the relief of the rates. This cutting of prices was very bad finance. What would they think of any firm in Belfast having a good paying concern if they started another concern next door in order to take some of the profits away by cutting prices? Would such a course not result in bankruptcy? Yet this was what the Electricity Department were now trying to do. They had never from their inception paid anything towards the rates. Their machinery, with the exception of that belonging to the Tramways Department, was entirely obsolete; and though they maintained that they had made £11,000, he believed that if they had written off a proper amount for depreciation, they would be nearly £5000 to the bad. He went on to complain that mains laid by the Gas Department were allowed to lie idle because some councillor wished the electric light to be extended to some particular district. The Gas Committee had been drained to the last penny in relieving the rates and otherwise helping the Corporation; and they could not give them any more. The year 1904 was the last year that the Electricity Department was under the control of the Gas Committee; and in that year the Electricity Department, under the guidance of the Gas Committee, made £6093; while in 1905, the first year that it came into conjunction with the Tramways Department, it only made £4357. In 1906, after two years of electrical tramway running, the department only made £691. The Gas Committee had made several reductions in the price of gas. When he became Chairman of the Committee, the price was 2s. 3d.; and they had increased the gas discount by 5, 10, and 15 per cent. They now asked the Corporation to agree to a further 5 per cent., making the total discount 20 per cent. in all. If they could get some kind of undertaking that the Electricity Department would not compete in such a manner as to do the Gas Department out of their profits, he would be able to understand it; but, as a matter of fact, they were now selling electric current at a less cost than it was manufactured for.

On being appealed to as to whether the resolution regarding the Electricity Department was in order, the Lord Mayor (Alderman Sir Robert Anderson) said the Gas Committee had not made any definite recommendation. They simply desired that the Corporation should consider the matter. It was a unique suggestion for one Committee to make concerning another. They must have a tremendous conceit of themselves when they wanted to manage, not only their own business, but also other people's affairs.

Alderman Sir James Henderson moved as an amendment that all reference to the Electricity Department be omitted from the Gas Committee's minutes. He said, when the question was brought forward, the Tramways and Electricity Committee set themselves to secure fuller information in regard to the whole matter. As a result, with reference to the statement that the Electricity Department was making no profit, they found from the abstract of the audited accounts that the net profit from the commencement to March, 1908, was £44,722. This sum had been disposed of as follows: Transferred to renewals fund, £28,950; transferred to depreciation fund, £7573; balance carried forward, £8198. This amount did not include the additional sum set aside annually as sinking fund, which was sufficient to pay off the various loans in the periods (varying from 25 to 30 years) fixed by the Local Government Board. These periods represented the life of the plant on which the loan was expended. The net profit might have been applied to the reduction of the rates, if the Committee had not very properly thought it better policy to build up a renewals fund against some unforeseen expenditure. As to the loan from the Gas Department of £32,500, the Electrical Department paid to the general purposes fund 6½ per cent. per annum for this sum. He thought these facts showed that the Electricity Department was in a very sound and satisfactory condition, and that so far as the Committee were concerned they were trying to do their duty in the same way as the Gas Committee—with benefit to the ratepayers. It was a most extraordinary thing that, though Mr. Doran made such a poor statement about the state of the Gas Committee's funds, at the same time he agreed to the enlarged discount of 20 per cent. It would be far better to leave the Electrical Department to be controlled as at present, and to let the

Gas Committee continue their own good work in their own useful way, without any opposition between the two Committees.

The amendment was seconded by Mr. Riddell, who said he certainly must disagree with the Chairman and the majority of the members of the Gas Committee in regard to their action in this matter. He believed the Committee had quite enough work to do of their own; that their responsibility would be very largely increased in the near future; and that it would be absolutely impossible for them to give the requisite care to the Electricity Department. In addition to this, it seemed to him that it would be perfectly absurd to place the management of the electrical light organization in the hands of the Committee who were now in charge of the department which must, in the very nature of things, be more or less a rival and competitor for some of the business. If this were done, either the Gas Department would have to give way to the electric light, or, what was more likely, as the manufacture of gas was so dear to the hearts of the Committee, the electric light would play the part of Cinderella without the fairy godmother. For these reasons, and for others, it would be more advantageous to keep the department in the hands of the present Committee. He considered there was a close connection between the Tramways and the Electricity Departments, which might at some future time be separated with benefit, but which it would be inopportune to separate now. In case they were separated, he still thought that the present Committee was the proper one to carry on the business, perhaps divided into two Sub-Committees—one taking charge of the electric light and the other of the tramways, and the full Committee exercising control over both, and directing matters of policy. At the same time, he maintained that up to the present the Electricity Department had made no profit. He was not finding fault with the management, but with what was almost the universal system of municipal finance throughout the kingdom; for municipal trading had been a mockery to business men for many years, and the methods adopted were a byword among engineers engaged in the management of private concerns. He had examined the accounts of over 200 municipal electrical undertakings during the past few weeks. He found 70 of them showed a dead-loss without any provision being made either for reserve or depreciation; about 90, among them being the city of Belfast, had carried over their surplus funds to some form of account for the purpose of meeting depreciation and reserve; while 45 only had carried forward, in addition to the sum provided for reserve, anything towards the relief of the rates. Of the 45, he might say that the major portion in his opinion had been in too great a hurry to do so, and had made no complete provision for depreciation and reserve. It stood to reason that plant bought ten or twelve years ago, and which was more extravagant in the matter of generating than more modern machinery, should not be valued on the balance-sheet like machinery with superior economy that could be bought to-day. As to the amount that should be allowed for depreciation, the method adopted in this respect, both by the Electrical Department and the Gas Department, was not satisfactory.

The Lord Mayor said he thought it was a pity that anything should be said there that was liable to mislead the public or cause them to think that the Electricity Department was a failure. Everything connected with the works was thoroughly up to date, whatever might be said. It was just possible, of course, that since certain machinery was purchased improvements might have been introduced; but the Corporation could not have waited for the improvements. They secured the best machinery they could at the time; and they had now to make the best use they could of it. In addition to the statistics which Alderman Sir James Henderson had mentioned, he might give the following figures in connection with the department: Transferred to renewal fund to March, 1908, £28,950; transferred to sinking fund to December, 1908, £45,871; transferred to depreciation fund to March, 1908, £7573; balance carried forward at March, 1908, £8198; estimated net profit to March, 1909, £10,000—making in all £100,592. He hoped there would be no more friction in the matter. The whole discussion had arisen because permission was given for four electric lamps to be erected in Castle Place. As to the question of electric lighting generally, the department were bound to supply current to those who applied for it, if they agreed to the terms; and the Gas Committee had no right to be angry with the Tramways and Electricity Committee for doing their duty in this respect.

Mr. Doran said that, after the discussion which had taken place, he would agree to take back the portion of the minutes referred to in the amendment.

The amendment was accordingly withdrawn. Discussion then took place with regard to the increased discount to gas consumers; and as the result an amendment was carried referring the matter back to the Committee for re-consideration.

## MUNICIPAL UNDERTAKINGS AT LOUGHBOROUGH.

When the estimate for the general district rate was being considered by the Loughborough Town Council, Mr. Hands said he could not help feeling disappointed at the meagre result obtained after all by the reduction on the whole of the rates of but a penny. He would draw attention to one drain on their resources, the Electricity Department; for £1500 had to be provided for the maintenance of this "white elephant," amounting to 4d. in the pound. But another thing which struck him as equally bad was the loss upon the gas-works. It would be news to some to know that this concern was also worked at a loss. When they considered that after meeting the sinking fund and interest they had a loss of £921, which he was told should be really £831, and that this year the estimated loss would be £808, it would be seen that these two concerns were losing up to a 6d. rate. This did not speak specially well for municipal trading; and he was afraid it afforded a grand object-lesson. He fully appreciated the distress in the town and the empty houses, and all that sort of thing; but this did not account for the loss on the two undertakings named. Something was wrong; but he confessed he could not suggest a remedy. He would ask the Council to look jealously after any suggestion of capital expenditure on either concern. They had been too prone in the past to allow capital expenditure if they could provide it by loan, which brought in its way interest and sinking fund, from which they were suffering at the present time. They ought to be very careful; and he was glad to see, for the first time in the history of the Council since he had been a member, a spirit of economy practised by all the spending Committees.

Alderman Clifford said that Mr. Hands had referred to trading concerns of the Committees of which he was not a member; but he had left out another Committee of which he was a member. It was in the memory of the Council that they were compelled to go to this expenditure on electricity. They had an order in the Gas Bill for providing electricity; and other companies were endeavouring to get into Loughborough. They put off what might be called the "evil day" as long as they could; but in the end the Board of Trade told them they must do something—they had to leave off what was practically a "dog-in-the-manger" policy, and go in for the Electricity Department. They would remember that the gas-works cost them a considerable sum of money more than was anticipated—nearly one-third more—but they had got the works, and were bound in self-defence to prevent some other party coming in and competing against their light. The interest and sinking fund on this item alone amounted to £2078, which had to be provided for year by year; and he was pleased to say that last year there was a profit made on electricity of £589. Certainly the undertaking was improving at the present time. He would be perfectly candid about the gas. Last year they had a balance brought forward of £1340; and a balance of profit was brought forward from revenue of £5766. They had to pay against this interest on loans and sinking fund of £6597; and they had to pay £295 income-tax. Then also they took from the Gas Committee out of the balance and contributed to the district fund £500; so their total payments amounted to £7392. Against this they had the balance of £1340, and profits £5766; and the deficiency, which was carried to the next account, was shown at £286. He did not think that, taking into consideration the diminution of revenue for large consumers, there was anything to get alarmed at. There were business men who made a loss one year, but a profit afterwards. As for the Committee which Mr. Hands had glossed over very nicely, the estimated expenditure on the water-works for 1909 was £9941, and the sum spent £10,190. They had more receipts; but the deficit upon the working amounted to £2006. It was only fair when they were attacking gas and electricity to also remember the other Committees. The Water Committee, he was glad to say, had done as other Committees, and gone well into the matter; and this year they estimated their expenditure at £9640, with receipts £8225, leaving a deficit for the coming year of £1415. These were the losing concerns. But they had got good assets in the gas-works, which had made enough within £237 to pay the interest and sinking fund. At the same time, the water-works would improve; and it was, he thought, only a question of time when they might hope to pay both interest and sinking fund, and have something over for the rates.

## DUKINFIELD GAS DEPARTMENT.

### The Past Year's Working—Reduction in Price.

The Manager of the Dukinfield Corporation Gas Department (Mr. William Lindley) reports that the carbonizing plant again worked satisfactorily during the past financial year; but, owing to depression in trade and the cotton strike, there was a decrease of 5 million cubic feet in the make of gas. The total quantity of gas accounted for was 80,433,200 cubic feet, apportioned as follows: Cottages, by ordinary meters, 39,829,300 cubic feet; do., slot-meter consumers, 9,993,100 cubic feet; mills, 23,262,076 cubic feet; public lamps, 6,133,995 cubic feet; offices, works, &c., 1,214,729 cubic feet. The total revenue for the year was £14,180 (£10,936 being for gas), and the expenditure £10,175 (£4998 being for coal); leaving a gross profit of £4005. Adding £35 received as cottage rents, a total of £4040 was produced. Of this sum, £3172 was required for annuities, interest, and sinking fund; leaving a net profit of £868, compared with a profit of £552 for the year 1907-8, and a loss of £242 for the year 1906-7. According to a table, which has been verified by Mr. W. Moss, of Ashton-under-Lyne, showing the cost of gas per 1000 cubic feet sold for the past and the preceding financial years, the total cost of production in the former was 2s. 6·64d., and in the latter 2s. 6·38d.; the average prices being 2s. 8·63d. and 2s. 7·93d. There was consequently a gain of 2·59d. in 1908-9, compared with 1·55d. in the preceding year and a loss of 0·069d. in 1906-7. Mr. Lindley is consequently to be again congratulated on the results of his year's work. The quantity of coal and cannel carbonized in the twelve months was 7354 tons, and the total make of gas 86,904,000 cubic feet. As the quantity sold was 80,433,200 cubic feet, the unaccounted-for gas was 6,470,800 cubic feet, or 7·44 per cent. The make and sale per ton of coal were 11,817 and 10,937 cubic feet respectively, compared with 11,456 and 10,635 cubic feet in the preceding year. It may be added that the Gas Committee have decided to make a reduction in the price of 3d. per 1000 cubic feet.

**The Proposed Pensions for Coventry Gas-Workers.**—At the meeting of the Coventry Corporation last Tuesday, the report of the Gas Committee on a proposed scheme of pensions for employees in the Gas Department whose services will be dispensed with owing to the transfer of gas manufacture from Coventry to Foleshill, given in the "JOURNAL" last week (p. 323), was under consideration. Mr. Cash opposed the scheme, and moved, as an amendment, that the proposed pensions be reduced by one-half. After a long discussion, however, he withdrew it in favour of one proposed by Mr. Bannington, to the effect that the recommendation of the Committee be referred back, and that they be instructed to so readjust the hours of labour of the men that there would be no necessity to discharge any of them. The Mayor, however, ruled this amendment out of order, as it interfered with the powers which the Council had delegated to the Committee. A further amendment was eventually carried referring the whole scheme back to the Committee for reconsideration.

## PUBLIC LIGHTING OF FINCHLEY.

### Local Government Board Inquiry.

At the Offices of the Finchley Urban District Council, last Tuesday, Mr. H. R. Hooper, M.Inst.C.E., held an inquiry into an application made by the Council to the Local Government Board for sanction to the borrowing of £2200 for street lighting by means of arc electric lamps. The application was supported by the Clerk to the Council (Mr. E. H. Lister), and also by Mr. J. P. Connor, on behalf of the North Finchley Tradesmen's Association; but it was opposed by Mr. S. L. Oddie, for the North Middlesex (Hendon) Gas Company, and by Mr. Chambers, for the West Finchley Ratepayers' Association.

In addressing the Inspector in support of the scheme, Mr. Lister stated that the extra cost entailed by its adoption would be £739 per annum; the total annual outlay being estimated at £1000, less £261 the present cost of lighting. In addition, there would be the capital expenditure of £2200, for which application had been made. Several public bodies—notably the North Finchley Ratepayers' Association and Tradesmen's Club—passed resolutions in favour of the scheme.

Mr. Royston, the Chairman of the Highways Committee of the Council, said the Committee had considered the public lighting question in response to repeated applications for improvement; and as the arrival of trams in the district necessitated the widening of a thoroughfare, the present lighting of which would be inadequate to meet the new conditions, they were led to go into the matter. They came to the conclusion that flame arc lamps would be best; inasmuch as they would not only meet existing requirements, but were likely to satisfy the district for a number of years. The Committee were unanimous on the subject.

In cross-examination by Mr. Oddie, witness said the present cost of the incandescent electric light was £3 per lamp, and the cost of the new scheme would be £20 per lamp, inclusive of £3 for Council charges. They had only considered the question of gas in a general way. There was a discussion in 1905 as to how the lighting should be improved, and he received a tender from the Gas Company which was reported to the Council. The Electricity Committee intervened, however, and the Company's offer, which was to light 200 gas-lamps at £2 10s. per annum, was refused. He admitted that if these lamps stood by themselves, 10s. per lamp would have been saved by the acceptance of the offer. He suggested that electric arc lamps were cheaper than gas. Witness was questioned as to some figures he had given comparing the cost of electric light and gas; and he acknowledged that they were not correct. Counsel said they showed that the proposed scheme was a very extravagant one; and he submitted that the majority of the inhabitants were not in favour of it. Witness said he could prove to the contrary; but he added that all the members of the Council were not unanimous in its favour. Asked point-blank why he would not go in for gas lighting, he replied that the reason was that the Council determined several years ago to have electric lamps. Moreover, they had an undertaking which had pledged the ratepayers to the extent of about £100,000. Though the Gas Company might give them exceedingly advantageous terms, it would be a great advertisement for them and against the Council. He knew that electricity had been abandoned for street lighting in many places in the kingdom, including London. Questioned as to the Council's Bill of last year, witness said they withdrew the portion relating to the extension of the electric lighting area because the House of Lords sought to put upon them the Northumberland clause. Counsel remarked that they were now entitled to sell their light below cost price; and he asked witness if he called this a sound businesslike position to be in. Witness declined to answer the question, and denied that the scheme was put forward to benefit the electric light undertaking.

The Inspector interposed to point out that the Local Government Board had stated, in a communication dated Aug. 5, 1905, that "electric lighting was high compared with other lighting;" and that the Electrical Engineer called in by the Council had reported that the street lighting was unremunerative. Witness said they did not admit that it was unremunerative, but unprofitable. Asked by Mr. Wells (a ratepayer) whether, supposing he, as Chairman of the Highways Committee, had been considering a scheme for improving the lighting, and there had been in the parish a gas company and an electric light concern, not the property of the Council, he would have asked for a price, witness replied that, in those circumstances, he should have done so; but if there were an electric light undertaking owned by the Council he would not have their light regardless of whether or not it was supplied at a loss.

Mr. E. Calvert, the Electrical Engineer to the Council, in answer to the Clerk, gave particulars of the scheme, which he said was in no way connected with the present undertaking. In cross-examination by Mr. Oddie, witness said he did not agree with the Council's Consulting Engineer that the public lighting was unprofitable. He was aware that Mr. Preece had stated that they were supplying current for lighting at too low a price, and that their capital was abnormally high; and if he was correct, possibly the price ought to be put up. Answering further questions, Mr. Calvert said the loss on the first half-year's working of the electric light undertaking was £300; but in the second year there was a profit of £227, and in 1906 a profit of £106. In 1907, however, there was a loss of £719, and in 1908 one of £292. They had no depreciation fund and no reserve fund. Mr. Preece said it was desirable for them to fill up the reserve fund; but they were not able to do it.

Mr. Oddie then addressed the Inspector. He said the whole history of the electric light undertaking was tinctured with extravagance. The reckless way in which capital had been lost, and the unbusinesslike manner in which current had been sold below cost price, showed that the Council were not taking serious care to run the concern as it should have been run. He referred to the Gas Company's offer to supply 200 lamps with gas and maintain them at £2 10s. per annum, and said that instead of accepting this offer, which would have shown a saving of 10s. a lamp, the Council entered upon a scheme which threw a burden upon the rates. From that time to this, more money had been spent on public lighting than should have been done. The duty of the municipal authority was not to say they had some form of municipal trade in their hands and must not go outside their own building, but do what was in the best interests of the ratepayers. It was a matter of concern to the Gas Company, not only as competitors but as ratepayers, that the Council had given no consideration to the question of what was acknowledged throughout the kingdom to be the most economical form of lighting. He contended that they had ignored the Local Government Board and their duty to the ratepayers, and had not taken any trouble to find out what it would cost to light the roads with gas. In conclusion, he urged that electric current for street lighting was not profitable, and that the sum of £1000 would be sacrificed to the ratepayers by supplying current at a loss. If the Council had consulted the Gas Company, they could have had a better illuminant than the electric light at an incalculably smaller sum.

Mr. Chambers also addressed the Inspector, and complained that the Council did not consult the Gas Company.

The inquiry then concluded.

## DISPUTE AS TO LAYING A GAS-MAIN AT TAUNTON.

As the result of some friction which has arisen between the Taunton Town Council and the Gas Company in regard to the laying of a main, a special meeting of the Council was held last Wednesday, under the presidency of the Mayor (Alderman J. G. Price) to consider and determine, upon the recommendation of the Main Drainage Committee, that the Town Clerk be instructed to take proceedings against the Company for their wrongful act in breaking the roads and laying a gas-main in Kingston Road and Station Road, "in contravention of law, and to the injury and prejudice of the Corporation, as the road authority, and their works in and under the said roads." It should be explained that within the last two or three weeks the Company's workmen had been engaged in laying a main in the roads mentioned, which are situate in the northern end of the town. The work has arisen in consequence of the Taunton Tramway Company having decided to extend their line for about a quarter-of-a-mile beyond the railway station in a northerly direction, where there is a resident population of upwards of 5000. In view of this work shortly taking place, the Gas Company, from the point of view of the public convenience, decided to lay a new main in the same direction, so as to obviate opening the roads again after the tramway extension had been completed. They finished their work about a week ago, and have since made good the roads. During the progress of the work, a question arose as to the Company having interfered with a manhole and sewer; and, moreover, the Council alleged that proper notice to open the roads had not been given by the Company.

At the special meeting of the Council, the Town Clerk (Mr. G. H. Kite) read some letters which had been written by him and by Mr. David Edwards, the Borough Surveyor, to Mr. Alfred Edwards, the Secretary and Manager of the Gas Company, and also one from Mr. Archibald Channing, the Company's Solicitor, to the effect that he was quite sure the Directors desired to settle the matter in dispute in an amicable manner. As there appeared to be an eagerness to discuss the question, the Council, on the suggestion of the Town Clerk, resolved itself into Committee; and ultimately, on the proposition of Alderman H. J. Spiller, Chairman of the Main Drainage Committee, the report of the Committee was unanimously adopted. Subsequently the representatives of the Press were supplied with a copy of the report, which was as follows:—

> The Gas Company, without proper preliminary steps, and without depositing plans or making arrangements, in accordance with sections 8 and 9 of the Gas-Works Clauses Act, 1847, and in defiance of protests by the Borough Surveyor, as the proper adviser of the Council having control of the roads in the borough, and ignoring further protests by the Council through the Town Clerk, acting under instructions from your Committee, before and after the 27th of April, broke up, and persisted in breaking up, parts of Kingston and Station Roads, and altered and interfered with a manhole to the Council's sewer, and laid a gas-main over, and in close proximity to, the said sewer, thereby interfering with, and preventing access by the Council to, the said sewer. Your Committee present the letters before referred to and the notice served on the Gas Company, all of which have been ignored by the Company. Your Committee regret that the extraordinary procedure of the Company compels them to recommend the Council to instruct the Town Clerk to take proceedings, on behalf of the Council, for penalties under the said Act, or otherwise as he may advise, unless the Gas Company are prepared to divert the main (making good the manhole) in such direction as recommended by, and to the satisfaction of, the Borough Surveyor.

The Council then adjourned.

### Statement by the Gas Manager.

In consequence of this dispute, our Taunton Correspondent called upon Mr. Edwards to ascertain his views on the subject for publication in our columns; and he obtained the following particulars.

With regard to the allegation that no proper notice had been given by him for permission to break open the roads, Mr. Edwards emphatically denied this, and showed, by a book in the Company's offices, proof of this having been done by the signatures of the person who delivered the notices—two really having been given. The first was on April 29, 1908, when the Company were engaged in laying a new main in Bridge Street; intimation being then given that they proposed in due course to lay a new main in the roads at the northern end of the town as mentioned. Then, on the 30th of March this year (the Tramway Company having intimated that they were about to proceed with their extension), Mr. Edwards again gave notice to the Council that he proposed to carry out the work from that date; and this was subsequently done. During its progress, the Borough Surveyor saw Mr. Edwards on the spot; and, in response to a question by the latter as to what was required to be done, the Surveyor said he wanted the line of the main altered so that the pipe should be inside the manhole instead of outside as at present. Mr. Edwards pointed out that there was not room for this to be done; but he told the Surveyor that if the manhole could be altered, he would put the pipe inside. The Surveyor asked at whose expense this was to be done; and Mr. Edwards immediately replied: "At the expense of

the Gas Company." The Surveyor then went away without coming to any decision; simply saying: "You will have to alter your line."

As the matter is now in the hands of the Solicitors on either side, Mr. Edwards declined to say anything more. We understand that the Company have offered to favourably consider any suggestion made to put an end to the dispute; and the general feeling in Taunton is that a settlement satisfactory to both sides will be arrived at.

## METROPOLITAN WATER BOARD.

At the Meeting of the Board last Friday, Mr. W. I. Burns moved that the sum of £53,329 11s. 2d. in the cash paper which was recommended for payment by the Finance Committee be reduced by £500. He said that when the question of the salary for the Chairman first came before the Works Committee, it was passed there by a majority of 10 votes to 2. When it came before the Board, it was passed by a majority of 19 votes to 2—Lord Welby and the Vice-Chairman of the Board not voting, and only 24 members being present. A number of members did not consider it was a proper expression of the Board's opinion when only 21 voted out of a Board consisting of 66 members. Mr. Lawrence seconded the amendment. The Chairman (Mr. E. B. Barnard, M.P.) said that what was proposed at the preceding meeting did not in any shape or form emanate from him. It was perfectly well known that he did not stand to be a personal gainer. On the amendment being put, only eight members voted for it; and the original amount as recommended by the Committee was passed for payment. Mr. Burns said he should give notice to rescind the motion with reference to the Chairman's salary.

The Appeal and Assessment Committee reported that last year the Board decided to treat as domestic supplies, under sections 8 and 9 of the Charges Act, certain supplies which had been previously afforded by meter. Their attention had now been directed to the fact that in some cases the consumption had greatly increased as a result of this concession, and that a charge on value was not commensurate with the consumption. In such a case, the Board had power, under section 20 of the Charges Act, to require that the supply should be taken by meter, and it would be well if they were authorized to put the section into operation where necessary. The Committee recommended that they should be authorized to apply it in such cases as they might deem expedient; and the recommendation was agreed to.

A return was presented relating to the supply of water for the month of March. It showed that the average daily quantity sent out was 214,989,000 gallons. The houses, &c., supplied numbered 1,088,501; the estimated population being 7,045,814. The mean supply per head per day was 30·5 gallons, compared with 29·4 gallons in the corresponding month last year. The total quantity of water in store in impounding reservoirs at the end of the month was 6919 million gallons, against 6735 millions at the end of March, 1908.

## NOTES FROM SCOTLAND.

**From Our Own Correspondent.**

*Saturday.*

The question of charging differential prices for gas is apparently about to become again the subject of controversy in the Glasgow Town Council. For long the Council refused to adopt the practice, holding firmly to the principle that gas should be charged the same to all the citizens, who, as ratepayers, are equally responsible or liable in the matter of the upkeep of the gas-works. In 1902, on the strong recommendation of the late Mr. W. Foulis, the Corporation made a reduction of 4d. per 1000 cubic feet in favour of motive power users. Then in 1905 a subdivision of the differentiated class was made by the granting of a special allowance on gas for manufacturing purposes, other than for lighting and domestic uses. This policy has been followed since. The subject has been again brought forward by the preparation of a report for the Gas Committee, by Mr. A. Wilson, the Engineer. In his report, Mr. Wilson states that when the Gas Committee decided to charge a reduced rate for gas for manufacturing purposes, as being in line with gas used for power, it was at once seen that there would be considerable difficulty in drawing a line of demarcation between gas to be charged at the manufacturing rate and that to be charged at the ordinary or domestic rate. With regard to gas for ordinary trade purposes—viz., that used in the making of ordinary articles for sale—there was little trouble. Under this head were classed the gas used for calendering and singeing, kilns, furnaces, blowpipes, tailors' irons, hot-plates for bakers and confectioners, &c. It was also decided that gas used for cooking in restaurants and tea-rooms should be included under the manufacturing rate; but all applications from hotels, clubs, and lodging-houses had been denied, as, under the present system of charging, the only practical rule which had been found to be workable was that where the premises were used as a residence all the gas consumed was to be charged as domestic, but where, as in a tea-room or restaurant, there was no one in residence, the gas for the articles sold might be classed as manufacturing. At present, the number of meters installed to register the gas used for manufacturing purposes totalled 1030. Last year the quantity of gas sold for power was 356,903,000 cubic feet, and that sold for manufacturing purposes 206,371,000 feet. The Gas Committee, who had had the report under consideration, recommended that after June 1, and provided the estimates for next year would allow of this being done, the prices to be charged by the Corporation for gas supplied for non-illuminating purposes should be: For motive power purposes, 1s. 9d. per 1000 cubic feet for quantities of less than 500,000 cubic feet per annum, 1s. 8d. up to 2,000,000 feet, 1s. 7d. up to 5,000,000 feet, and 1s. 6d. above 5,000,000 feet; for manufacturing purposes, 2s. 1d. per 1000 cubic feet for quantities supplied of less than 100,000 cubic feet per annum, 1s. 9d. up to 500,000 feet, 1s. 8d. up to 2,000,000 feet, 1s. 7d. up to 5,000,000 feet, and 1s. 6d. above 5,000,000 cubic feet. From a census of the probable consumers who would come under these scales, Mr. Wilson estimated that the various hotels, clubs, institutions, &c., which would require to be added to the present consumers of gas for manufacturing purposes would use (say) 50 million cubic feet of gas per annum. This would mean a reduction of income to the department of probably £1000; and if the proposed scales of charges were adopted, the extra reduction of revenue to the department would be about £800. But these rates would no doubt greatly encourage the use of gas for non-illuminating purposes. The recommendation came before the Town Council on Thursday, but was not adopted. Mr. W. C. Martin moved that it be sent back to the Gas Committee for further consideration. In his opinion, the poor people of Glasgow would have to pay for the reduction of income which would result. Bailie M. W. Montgomery, the Convener of the Committee, agreed to take the minute back.

On Friday of last week, the Corporation of Aberdeen paid their annual visit of inspection to the gas-works. In the walk through the works, Mr. S. Milne, the Engineer, Mr. Smith, the Assistant-Manager, and Mr. W. A. Stewart, the Convener of the Gas Committee, acted as guides. It is reported that special interest was taken in the carburetted water-gas plant, which was introduced in the autumn of last year, and was seen that day by a number of the councillors for the first time. The working of the plant was explained by Mr. Milne. The company also looked at the coal-stores, of a capacity of over 7000 tons, the retort-bench, in which there are 432 retorts, West's charging and drawing machines and coal-breakers, and at all the other plant. Great satisfaction was expressed at the up-to-date condition of the entire works and plant. After refreshments had been served, Bailie Wilkie said that the very large and important Corporation department they had inspected must impress all who had seen it; and they must recognize that the man at the head of the concern must be possessed of brains. The Corporation had been very fortunate in having had as Manager of the gas-works the late Mr. Smith, who was an able, efficient, and admirable official. They were also fortunate in having, as Mr. Smith's successor, one who was brought up under him, and who therefore knew all the ways of the work. Mr. W. A. Stewart said the works had been so well managed that, although they had had a capital expenditure of £450,000, their total debt was only £170,000. The Corporation had, therefore, a very valuable asset in the gas-works; and it would become even more valuable. The price of gas in Aberdeen, at 2s. 7d. per 1000 feet, was as low, comparatively, as in any other city in Scotland. The installation of carburetted water plant gas was called for owing to the high price of coal. It had been necessary for them to introduce the new system, and they had been well pleased with it. Mr. Milne, on behalf of the officials, acknowledged, and expressed pleasure at, the great interest shown by the councillors in their visit to the gas-works. The illuminating power of their gas was 4½ candles above that supplied in Glasgow, and 3½ candles above that in Dundee. If more incandescent burners were used, there would be fewer complaints. In connection with the carburetted water gas plant, they anticipated being able to buy oil at from 5s. to 7s. 6d. per ton less than last year; and he expected that they would be able to reduce the price of gas.

It was scarcely to be expected that so important a step as the transfer of the Kirkcaldy Gas Company, Limited, could be effected without that ubiquitous individual, the anonymous writer to the newspaper editor, seeking to have a hand in the business. There have appeared in the local Press a number of letters, all anonymous, the burden of which is that more information should be given to the community before it is decided whether or not the Company's undertaking should be acquired. The letters are in themselves of no consequence; but they have had the effect of drawing from Mr. J. Wright, the Convener of the Lighting Committee of the Town Council, in a letter published to-day, some explanations as to the action of the Committee. The Committee, he says, found that the Act of Parliament lays down that a corporation cannot start the manufacture of gas where a company already exists, and that before entering into negotiations with this Company they must first of all come to a decision to purchase. They had no alternative, therefore, but to come to this decision. The correspondents may rest assured that the price to be paid for the undertaking will be on fair and equitable lines. In support of the transfer, Mr. Wright compares the case of Dunfermline with that of Kirkcaldy. Last year, he says, the price of gas in Dunfermline was 2s. 6d.; while in Kirkcaldy it was 3s. 4d. The rise in price in Dunfermline during the years 1897 to 1901, was 4d, while in Kirkcaldy it was 8½d.; and the fall in the price of gas in Dunfermline, since 1901, had been 1s. 5d., while in Kirkcaldy it had been only 3½d. These were some of the considerations which had led the Committee to the conclusion that it would be a good thing for Kirkcaldy to purchase, and that the present is the time to do so. What they had to see to now was to get the best possible men to settle the price for them.

The vexed, though small, question regarding the supply of gas to the village of Crossgates, in Fife, was before the Dunfermline District Committee of the County Council on Tuesday. Hitherto we have had our attention drawn to the subject by the controversy among the inhabitants as to whether they should take gas from the Cowdenbeath Gas Company or from the Corporation of Dunfermline. As it came before the District Committee, the subject resolved itself into a requisition by the inhabitants for the formation of a special lighting district, without regard to the nature of the illuminant; but it is to be noted that the Master of Works, in preparing estimates for the scheme, adopted gas as the illuminant. His estimate is that 4½d. per pound upon an assessable rental of £3472 will produce £65. The expenditure of this sum he estimates would be: Interest on the capital cost of 38 lamps (£123 10s.) £4 6s. 5d., and instalments of repayment, £6 3s. 6d. —together £10 9s. 11d.; and lighting, &c., at 28s. 6d. per lamp, £54 3s., making an annual outlay of £64 12s. 11d. The Finance and Public Health Committee reported that they had had before them an application by the Cowdenbeath Gas Company for permission to lay a gas-main between Cowdenbeath and Crossgates, and also a protest by inhabitants in Crossgates against the granting of the wayleave, and that the Committee recommended that a decision in both matters should be postponed until it was seen whether a lighting district would be formed. If a district were formed, the District Committee would have to provide for the lighting of it; and it would fall to them to negotiate as to the best source from which the lighting could be obtained. The

Committee further recommended that the Clerk should make inquiries as to the terms on which the Cowdenbeath Gas Company and the Corporation of Dunfermline would furnish supplies of gas to the district, both for public and for private lighting. The Clerk stated that offers from both parties had been received, but too late for consideration that day. The subject was therefore sent back to the Committee.

The Dumfries Town Council on Thursday made the joint appointment to the post of Gas Manager which was foreshadowed in the report of a meeting of the Town Council, held a fortnight ago—Mr. J. Smith, the Assistant-Manager, and Mr. S. Dickie, the Clerk, being appointed. The appointment was not a unanimous one. Mr. Dakers moved that they advertise the situation. Mr. Robinson considered that when they had two such men it would be absurd to go outside. Bailie Thomson, the Convener of the Gas Committee, remarked that Mr. Smith was an accomplished gas engineer, and had all the necessary qualifications for the position. During the time he had had charge of the gas-works they had got 500 cubic feet more gas per ton of coal than he ever remembered before. They had never had a more conscientious cashier than Mr. Dickie. The Council, on a division, made the joint appointment by 18 votes to 6. The Council then agreed to vote to Mr. Malam's widow his salary for the month of May, as a gratuity. They also resolved to advance the wages of the gas stokers by 6d. per shift.

The Kirkcudbright Town Council, on Thursday, considered a report by Mr. W. B. M'Lusky, of Perth, regarding the proposed alterations at the gas-works. Mr. M'Lusky estimated the cost of the alterations which were necessary at £2000. The Clerk said the Gas Committee had considered the report, and recommended the adoption of part of the scheme proposed. This included a steam-boiler, at a cost of £164; a gasholder and tank, at a cost of £820; foundations for the tank, £125; and a tar-column and alterations upon the condenser, £444. The Committee also recommended that a new setting of three retorts be put into a bench at present out of use, at a probable cost of from £65 to £75, the expense to be met out of revenue. The Council adopted the recommendation of the Committee by ten votes to four.

On Thursday of last week, the ceremony of cutting the first sod in connection with the erection of new gas-works at Fauldhouse was performed by Mr. W. Prentice, the Chairman of the newly-formed Gas Company, in the presence of the Directors and shareholders. Mr. Prentice, in the course of his remarks, said they were fortunate in having for their Engineer Mr. Wilson, the Manager of the Coatbridge Gas Company. All the money required had been subscribed in a very short time. The plant would be in full working order early in August.

At a meeting of the Helensburgh Town Council last night, Mr. Mitchell, the Convener of the Gas Committee, stated that during the past year there had been a considerable increase in the manufacture and consumption of gas, and it was worth noting that there had been a very marked increase in the use of prepayment meters. The money collected from these meters amounted to £413—an increase of £167. The Gas Committee intend to make overtures to the Town Council for the purchase of the old Grant Street School, for extending the gas-works.

The Directors of the St. Andrews Gas Company intimate the abolition of cooker-rentals, and state that they are now prepared to supply and fix, free of rental and free of charge, gas cookers, grills, and fires.

## CURRENT SALES OF GAS PRODUCTS.

**Sulphate of Ammonia.** LIVERPOOL, *May* 8.

The month opened with a quiet market, and, there being no special demand for any point, production has only been disposed of at declining prices, and buyers who have contracts for May shipment to cover seem inclined to postpone the operation. The closing quotations are £11 2s. 6d. per ton f.o.b. Hull, £11 3s. 9d. to £11 5s. per ton f.o.b. Liverpool, and £11 7s. 6d. per ton f.o.b. Leith. Although makers have modified their views with regard to prices in the forward position, they have not done so sufficiently to induce much business; buyers' ideas being scarcely above spot values for delivery up to the end of the year. For near months, however, spot prices have been accepted.

**Nitrate of Soda.**

Local supplies being strongly held, spot quotations are 10s. 4½d. per cwt. for 95 per cent., and 10s. 7½d. for refined quality, though spring demand has slackened, and stocks are somewhat plentiful.

**Tar Products.** LONDON, *May* 10.

The markets for tar products have been unchanged throughout the past week, with the exception of pitch, which is still very firm. It is evident that the majority of manufacturers are well sold for this year's delivery, and will have no necessity to come into the market unless they consider that the price offered warrants them doing so. In addition to this, there is, of course, a great amount of uncertainty as to the quantity of tar which will go on the roads in the summer—it being felt that the proposals in the Budget with regard to roads will have a great effect on the market for this article. Up to the present, Continental consumers have been decidedly averse to paying the advanced prices. They still seem to think that by withholding from the market they will do better in the end; but this is doubtful, in the light of the very strong position of the article in this country. Creosote is firm, but without alteration in price; and it is still possible to buy at reasonable prices for prompt delivery. Carbolic acid is firm, but apparently offers are all emanating from dealers. It does not seem that consumers are willing at present to pay the price asked. Crystals are very quiet indeed. Benzol, 90 per cent., is dull; and 50-90 per cent. also has been sold at very low prices. Toluol appears to be easier than was the case last week. Solvent naphtha is steady; but there is no alteration in price, though actual London qualities are in good demand. Coke-oven crude naphtha is fetching a very poor price, owing to the fact that it consists almost entirely of benzols which are practically unsaleable.

The average values during the week were: Tar, 13s. 9d. to 17s. 9d., *ex* works. Pitch, London, 25s. 6d. to 26s.; east coast, 25s. to 26s.; west coast, 24s. 6d. to 25s. 6d. f.a.s. Mersey ports, 24s. 6d. to 25s. f.o.b. others. Benzol, 90 per cent., casks included, London, 5⅜d. to 6d.; North, 5d. to 5½d.; 50-90 per cent., casks included, London, 6⅜d.; North, 6d. to 6½d. Toluol, casks included, London, 8½d. to 8½d.; North, 7¾d. to 8d. Crude naphtha, in bulk, London, 3½d. to 3¾d.; North, 3d. to 3¼d.; solvent naphtha, casks included, London, 11d. to 11½d.; North, 9½d. to 10d.; heavy naphtha, casks included, London, 11d. to 11¼d.; North, 10d. to 10¼d. Creosote, in bulk, London, 2⅜d. to 2½d.; North, 2⅛d. to 2¼d. Heavy oils, in bulk, 2 1/16d. to 3d. Carbolic acid, 60 per cent., casks included, east coast, 1s. 1½d. to 1s. 2d.; west coast, 1s. 0½d. to 1s. 1d. Naphthalene, £4 to £8; salts, 37s. 6d., packages included and f.o.b. Anthracene, "A" quality, 1½d. to 1¾d. per unit, packages included and delivered.

**Sulphate of Ammonia.**

The market for this article has been very dull throughout the past week, and prices closed lower all round. In London, £11 2s. 6d. would probably be accepted upon Beckton terms; and it is doubtful whether anything over this figure could be secured in Hull. In Liverpool, the price is about £11 5s.; while in Leith, though manufacturers are asking £11 10s., they cannot obtain this figure.

## COAL TRADE REPORTS.

**Northern Coal Trade.**

There is a steady request for coals in the north-eastern trade, but, on the whole, the prices are slightly easier than they were a fortnight ago, though the Baltic demand is now setting in in earnest. In steam coals, best Northumbrians are from about 12s. 1½d. to 12s. 3d. per ton f.o.b., second-class steams from 10s. to 10s. 6d., and steam smalls show a better demand at from about 5s. 6d. to 6s. 6d. The output at the collieries is heavy; and it is well taken up. Gas coals show a falling off in the demand for home use; but the exports seem to be heavier. Prices are generally steady for Durham gas coals at from about 9s. 3d. to 10s. 4½d. per ton f.o.b. for the usual classes, according to quality; while for "Wear specials," up to 10s. 9d. per ton is quoted. As to contracts, there are some in negotiation for Northern boroughs, but not to any large extent; and there are also some of moderate quantities for export over the shipping season. The prices that seem probable are not very much different from those that are above quoted for current sales, so that there is little difference in values over the week. In coke, the market is stronger. Gas coke is steadied by the smaller output, and is quoted at from 12s. 6d. to 13s. 3d. per ton f.o.b. in the Tyne.

**Scotch Coal Trade.**

The demand for shipping is improving. The home request remains quiet, particularly for coal for manufacturing purposes. Coalmasters are taking up the position that present prices are unprofitable to them, and that they are entitled to a further reduction of miners' wages to the amount of 12½ per cent. The prices quoted are: Ell 8s. 6d. to 10s., splint 9s. 6d. to 9s. 9d., and steam 8s. 9d. to 9s. per ton f.o.b. Glasgow. The shipments for the week amounted to 311,564 tons—an increase of 8492 tons upon the preceding week, and of 1926 tons upon the corresponding week of last year. For the year to date, the total shipments have been 4,415,398 tons—an increase of 277,261 tons upon the corresponding period.

## THE MIDLAND GAS-COAL PROBLEM.

The following article appeared in the editorial columns of the "Iron and Coal Trades Review" last Friday.

Negotiations for the renewal of gas-coal contracts have this year commenced at a much earlier date than usual. The uncertainty as to the higher cost of production, owing to the coming into operation of the Miners' Eight Hours Act on July 1, has, no doubt, tended to increase the anxiety of gas engineers to arrange their contracts as early as possible. The prices at which some of the large London Gas Companies have obtained supplies from Durham collieries make the possibility of any portion of their orders going to the Midlands very remote; for, even with a gas mixture, it would not be possible to compete, either by rail direct or *viâ* Hull. In fact, collieries will not attempt to do so, as the idea of quoting anything like the Durham prices is out of the question.

There have already been a good number of contracts renewed, especially with towns in the Southern Midlands. Generally, they have not adopted the usual method of advertising for tenders in the trade papers, but have asked only the firms who are at present supplying them; and in many cases they have renewed their contracts on the best terms possible. In colliery circles, there has been an understanding that 6d. per ton on last year's prices should be the maximum reduction given. But, as is usual in a falling market, coalowners do not stand loyally to each other, and their efforts at combination are greatly discounted by firms who are anxious to extend their operations, and will accept less than the general prices. Gas engineers are more successful in combination than colliery owners. At their meetings, held in different centres periodically, helpful hints are passed round; quotations and results obtained from different coals are compared; and a manager may thus readily obtain full information in regard to the comparative value of any fuel he wishes to use.

Many contracts have been renewed at 6d. per ton reduction; but in some cases it has been necessary to concede 9d. in order to secure a renewal of the business. This is a serious thing to collieries, and cannot, in many instances, leave any distinct margin of profit. There has been a reduction of 5 per cent. in miners' wages; but that is a very small thing compared with a reduction of 9d. per ton. The highest grade qualities of gas coals are holding their position best. The tonnage of this class raised has not greatly increased in recent years, while the demand is fully maintained; but in second-rate qualities a greater tonnage is raised, and consequently the competition is keener.

Since the coal boom of 1900, gas engineers have given special attention

to the question of using cheaper fuels than previous to that year; and at many large works a much greater proportion of small fuel—such as bean nuts, pea nuts, and slack—is carbonized. This is especially the case at works nearest the field of production, as at towns far removed it is found more economical to secure best coal; the results obtained being most satisfactory, and a considerable saving being effected in carriage and wear and tear.

## West Bromwich Gas Undertaking.

At a meeting of West Bromwich Town Council last Wednesday, the Gas Committee reported that the sales of gas during the financial year ending March 31 were 329,345,388 cubic feet—a decrease of 12,718,352 cubic feet as compared with the previous year; and the amount of gas rental was £40,074—showing a decrease of £1514. Alderman Wilson said that the increased prices they had had to pay for their coal and the decreased sales would make a great difference to the concern. Mr. Lawley did not think the reduction was among the ordinary consumers, but was owing to the fact that several large works had changed their system and had ceased to use gas. Alderman Blades suggested that the falling off might be accounted for by the competition of the electricity undertaking. Alderman Wilson, in reply, said the reduction was chiefly by large consumers, who had adopted a system of their own for generating electricity. The gas undertaking had also suffered to some extent through the competition with the Electricity Department, and he suggested the advisability of adopting some such arrangement as they had in Birmingham, where there was a Joint Committee of the two undertakings. The report was adopted.

**Bahia Blanca Gas Company, Limited.**—In the report to be presented at the second ordinary general meeting of this Company on Thursday, the Directors state that the profits for the six months to Dec. 31 last amounted to £1867. Adding the £2048 carried forward makes an available total of £3915, out of which they recommend a dividend of 2 per cent. on the "A" shares, free of income-tax, carrying forward £915.

**New Joint-Stock Companies.**—The Mazza Centrifugal Gas Syndicate, Limited, has been registered with a capital of £35,000, in £1 shares, to adopt an agreement made between Edoardo Natale Mazza and H. A. Bourich, and to acquire any invention or machinery in connection with the separation of air or any other gaseous mixtures, compounds, liquids, and other bye-products and processes. Minimum subscription, ten shares. Among the first Directors is Mr. C. B. Tully. The Ashbourne Gas Company, Limited, has been registered with a capital of £20,000, in £10 shares, to acquire the undertaking of the Ashbourne Gas Company, Derbyshire, and to adopt an agreement with J. Lister. The purchase consideration is £20,000, in shares.

## Comparisons of Gas and Electricity.

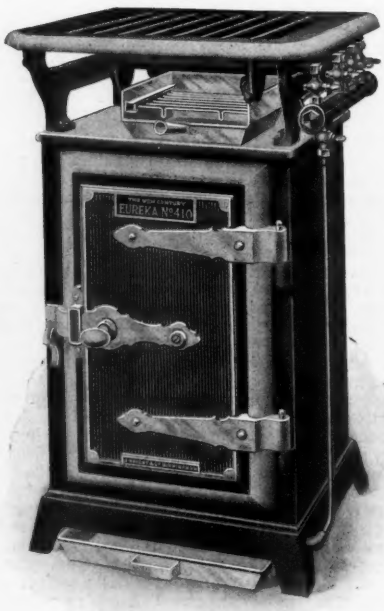
Referring to the article on "Gas or Electricity" which appeared in the "Daily Telegraph" on the 20th ult., and was reproduced in the "JOURNAL" the following Tuesday (p. 248), Mr. F. J. Walker, the Hon. Secretary of the conference of chief officials of the London Electric Supply Companies, recently wrote to our contemporary as follows, with regard to the statement that to light a shop with 1000-candle power for a year of 1500 hours costs £65 by gas and £320 by electricity: "Metal filament electric lamps can provide 1000-candle power at a consumption of 1⅛ units per hour, or 1800 units for 1500 hours, which, at 4d. per unit, amounts to £30. To this should be added about £5 per annum for lamp renewals." This statement was replied to by Mr. F. W. Goodenough, the Chief Inspector of the Gaslight and Coke Company, in a letter which appeared last Friday. In the course of it, Mr. Goodenough said: "I should like to point out that with inverted incandescent gas-burners, supplied with gas at 2s. 9d. per 1000 cubic feet, the cost of obtaining 1000-candle power for a year of 1500 hours, including the renewal of mantles at the contract price at which this Company undertake to maintain their consumers' burners, would be only £13—not £65 as stated. Moreover, the amount of £5 per annum which Mr. Walker allows for the renewal of metallic filament lamps is certainly a conservative estimate; and in actual working it is highly doubtful whether the consumer would escape with a bill of less than £10 for lamp renewals when providing himself with 1000-candle power for 1500 hours. This would make the cost of electric light £40, against £13 for gas, or three to one in favour of gas lighting."

**Gas-Works Policy at Driffield.**—In an estimate submitted by the Finance Committee to the Driffield Urban District Council, they stated that the Gas Committee had not asked for a contribution from the rates for the repayment of loans; the Committee hoping to meet these payments out of revenue. Mr. Purdon said he was pleased to hear that the gas-works had again been so successful; and he hoped the day was not far distant when the price of gas would be reduced. Mr. Longbottom said he was of opinion that it would be mistaken policy during the next eight years, during which time the repayment of loan and interest would be in operation, for the Council to interfere with the price of gas. Mr. Brown, in reply, said at present the consumers were purchasing the works for the town—that was, the loans and interest thereon were being paid entirely out of profits on the working. If they were to continue this for another eight years, he thought that at the end of this period the consumers would be justified in coming to the Council and pointing out that, as they had almost entirely purchased the works through the high price paid for gas, they were entitled to gas at something very little over the cost of its manufacture—which he supposed was somewhere about 1s. 6d. per 1000 cubic feet. It was scarcely fair on the part of the Council to make the consumers pay for the works, and then expect to get a big profit out of the consumers when the works were paid for.


# 43 Years of Progress!

1866

1909

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## Gas v. Electricity for Heating.

Our readers are aware that the merits of gas and electricity have recently been under discussion in the columns of the "Daily Mail." A few days ago, a correspondent—a bank manager, of Bristol—gave an example, from his own experience, of the cheapness of gas compared with electricity for heating purposes: He said: "At our Brighton branch the premises are heated by gas-radiators, of which there are three in number, and at the small cost of about £2 per quarter. When this branch was opened (which, by-the-way, is only about half the size of our Brighton branch), two electric-radiators were introduced for heating purposes as an experiment. During the cold weather, this method of heating proved totally inadequate, and cost us about £16 that quarter. The result is that the electric installation will be done away with, and gas laid down in its place." Another correspondent relates how he found an electric-radiator thrown out of use in an insurance office on account of its being inadequate to the warming of the room, and a movable oil-stove doing duty for it.

## Plymouth Gas-Works Threatened by Fire.

A fire which occurred on Saturday afternoon, at a timber-yard and box-making factory at Plymouth, caused considerable fears for the safety of the works of the Plymouth and Stonehouse Gas Company. The timber-yard, which belongs to Messrs. Edred, Marshall, and Co., adjoins the gas-works on its westerly side. The fire broke out close to the boundary; and soon the flames were threatening one of the holders which immediately adjoins the timber-yard, and was at the time full of gas. In consequence of the danger which would have been caused by the spread of the fire to the premises of the Gas Company, all the men available were called to the scene, and fire appliances were used to check the progress of the flames in that direction. The hose was played on the threatened holder; and it was lowered as quickly as possible—the gas being turned into another holder. Fortunately, an easterly wind was blowing, and strongly carried the flames away from the gas-works; and this circumstance aided in a very material degree the efforts of those who were exerting themselves to prevent the disaster of a fire at the gas-works. The timber-yard was practically destroyed, and the roof of a school some hundred yards away in a westerly direction was burnt off; but the gas-works were uninjured, though the flames at one time licked the holder, and blistered the paint. Sir Joseph Bellamy, the Chairman of the Company, and Mr. P. S. Hoyte, the Engineer and Manager, were early on the scene.

A lad has been killed at Berkeley Heath by the explosion of an acetylene gas-generator. It was stated that a man named Allen (who was injured) had for some time been making acetylene; and at the moment of the accident he was "experimenting with a larger generator, made from two paint drums."

**Testing of Prepayment Meters in Manchester.**—In moving the adoption of the minutes of the Gas Committee in the Manchester City Council, Alderman Gibson made reference to a question asked at a recent meeting of the Manchester Magistrates Testing Committee, as to whether the same test was applied to penny-in-the-slot meters in the city as to others. He said he wished to assure the public that the "double test" was applied in every case, and that the same care was taken with every meter.

**A Deficit at Huddersfield.**—Proposing the adoption by the Huddersfield Borough Council of estimates as the basis for laying a borough rate, Alderman Woodhead said: "The revenue account of the gas-works fund, for the first time in the history of the undertaking, shows a deficit on the year of £5593, as compared with a surplus of £6651 last year. The reduction of 3d. per 1000 cubic feet in the price of gas for lighting purposes accounts for £5600, and the receipts for residuals have also declined £2600; while the expenditure has increased, mainly in connection with the cost of carbonization and the increase in the rateable value of the undertaking for the purposes of local taxation. The Committee have decided to transfer the amount of the deficit from depreciation and contingencies account. The latter account now shows a credit balance of £30,523. I say nothing as to the policy of the reduction in the price of gas, but point out that last year there was a balance in relief of rates equal to a rate of 2d. in the pound. There would have been an increase of 2d. or 3d. in the rate, but for the decrease of 1d. in the Health Committee's requirements, and nearly 3d. in those of the Finance Committee." He remarked that the borough had passed very satisfactorily through a time of comparative depression.

**Gas v. Electricity for Public Lighting in Stepney.**—At the meeting of the Stepney Borough Council last Wednesday, the Works Committee reported to the effect that on Oct. 28, 1903, the Council agreed that Globe Road and St. Paul's Road should be lighted by means of Nernst lamps as soon as mains were laid. The Borough Engineer had informed them that the Borough Electrical Engineer and Manager had transmitted to him plans showing the positions of the proposed electric lamps in certain portions of Globe Road and St. Paul's Road, and had mentioned that it was proposed that these sections of the streets in question should be lighted by means of Osram lamps. The Committee, however, did not view with favour the proposal to instal lamps of either kind, and therefore instructed the Borough Engineer to prepare an estimate of the cost of lighting by means of arc lamps. According to his report on this matter, the erection of arc lamps in the portions of Globe Road and St. Paul's Road referred to would necessitate a capital outlay of £120 and £135 respectively, and an annual expense to the Council of £70 and £78; while the existing cost for incandescent gas lighting is only £17 8s. and £22 15s. 6d. In view of this fact, the Committee recommended that the resolution previously passed by the Council should be rescinded, and the existing lighting of the thoroughfares in question by means of incandescent gas-burners continued. The recommendations were carried without discussion or dissent.


# APPRECIATIONS.

SERIES No. I.

***A Gas Company writes:—***

Messrs. The Richmond Gas Stove & Meter Co., Ltd.,

132, Queen Victoria Street, London, E.C.

Referring to the Automatic Meter Installations, the complete supplying and fitting of which you recently undertook for us, we are perfectly satisfied with the way in which the whole work has been carried out. The Canvassing and Exhibition, as well as the actual fitting up of the houses, being undertaken in the very best possible manner.

Your foreman and his men were courteous in their dealings with consumers, which led to the very desired result of the Consumers being satisfied.

The systematic methods adopted by your staff in dealing with this matter reduced the trouble and work consequent upon the large number of applications for installations to an absolute minimum.

The increased consumption resulting from the fitting of the installations has been remarkable, as will be seen from the following figures:—

| | | |
|---|---|---|
| September Quarter, 1907 (before installations fitted) | 542,600 | cubic feet. |
| ,, ,, 1908 (after ,, ,, ) | 1,298,700 | ,, |
| December Quarter, 1907 (before installations fitted) | 768,800 | ,, |
| ,, ,, 1908 (after ,, ,, ) | 1,535,300 | ,, |

**May we help you to develop your consumption generally?**

**THE RICHMOND GAS STOVE & METER CO., LTD.**

*Advertisement of the RICHMOND GAS STOVE & METER CO., LTD.*

*London Offices and Show-Rooms: 132, Queen Victoria Street, E.C.* *General Offices and Works: Warrington.*

**A Victory for Gas at Bradford.**—It is stated by the "Leeds Mercury" that the experimental lighting of Manningham Lane, Bradford, which, as has already been fully recorded in the "JOURNAL," was in the form of a competition between the Gas Department and the Electricity Department, has ended in a victory for gas. Various types of gas lighting and electric lighting have been tried over an extended period; and as a result of the experience that has been thereby gained, it has been decided that the whole lane shall be lighted by gas-lamps.

**Dangers of Electric Lighting.**—What might easily have been a lamentable calamity took place recently at the Manor House, Stoke D'Abernon, the residence of Mrs. Phillips. Owing to the fusing of electric wires, a fire broke out in a portion of the building; but occurring in the daytime, it was quickly discovered and extinguished without any material damage. An alarming feature of the affair is that the experts who have been called in have been unable to account for the fusion—illustrating forcibly a serious danger of electric lighting.

**Welsbach Incandescent Gaslight Company, Limited.**—According to the report of this Company, the net profit of the whole undertaking for the year ended the 31st of March, including the dividend for the year 1907-8 upon the Company's holding in the Austrian Company, amounts to £46,041. To this must be added £5325 brought from last year; making in all £51,366. After deducting the interim dividend upon the 6 per cent. preference shares, there remains £33,369. The Board recommend that a final dividend on these shares at the rate of 6 per cent. per annum should be paid, that £10,000 be carried to the general reserve, and that £5372 should be placed to the credit of next year. They express regret that the result of the year's trading does not justify the declaration of any dividend on the ordinary shares.

**Electric Light Failure at Hastings.**—Half the town of Hastings was plunged into darkness for several hours last Thursday evening as the result of a breakdown (the second within a month) at the electric light works. Owing to the fact that apparently only one circuit was affected, there was light in some places and none in others. All the public lamps in Robertson Street were out; and the Baths Promenade and the Front were plunged in darkness, relieved only by the illuminations of the pier, on which gas is largely in use. Dinner was in progress in most of the hotels on the Front when the light failed; and as nearly all of them depend solely upon electricity for their light, its sudden extinction caused great confusion. It is reported that one hotel had to use 200 candles. Fortunately, none of the places of amusement were affected, except the one on the pier. The failure was caused by the fusing of wires. The light was restored by the following evening.

**Gas and Electricity at Barnstaple.**—In presenting the half-yearly financial statement to the Barnstaple Town Council yesterday week, the Mayor (Mr. F. W. Hunt) said that a saving of almost £100 had been effected in the cost of street lighting. The use of incandescent burners had resulted in a decrease in the consumption of gas, and there would be still greater advantage from this alteration in future. The accounts of the electricity undertaking showed a deficiency of £476 4s., which represented the loss on the past year's trading; but this was considerably less than that incurred on the previous year's working. Mr. H. Barrett, the Chairman of the Electric Lighting Committee, remarked that the estimates for public lighting showed a reduction of £216, due to a change in the lamps. There was no loss on the working of the electricity undertaking. The proper thing to have said was that the revenue account of the undertaking was insufficient by £476 to meet the capital charges they had to pay. It was not a loss at all.

**Extension of the Newport Gas Company's Supply.**—After considering, and subsequently abandoning on the ground of expense, acetylene and electricity for the public lighting of Rogerstone, near Newport, arrangements have been made with the Newport Gas Company and the St. Mellons District Council for affording a supply of gas in the near future. It appears that at least forty lamps are to be erected; and it is expected that there will also be a very considerable demand for gas on the part of the residents, who have been looking forward for some time past to the boon which such a supply will be to them. The Company propose to take advantage of the summer weather in order to carry out the work of laying some five miles of mains for the purposes named; and while they have contracted to light up the lamps on the 1st of September next, in all probability the lighting of houses will take place long before this date.

**Entertainment to Gas Supply Students at Wrexham.**—Students in the "Gas Supply" class in connection with the Wrexham Gas Company who sat for the City and Guilds of London Institute's recent examination in "Gas Supply" were entertained at tea last Wednesday by Mr. J. Braithwaite, the Engineer and Manager of the Company. After the repast, Mr. Evans proposed the toast of "Mr. and Mrs. Braithwaite." In responding, Mr. Braithwaite expressed his appreciation of the work done by the students during the past session, and referred to the exceptional opportunities afforded to the employees of the Company of furthering their technical education. It may be remembered that the Directors take a keen interest in this matter, and have for some years paid all the fees, &c., of the employees attending the local Science and Art and Evening Continuation Classes. Mr. S. H. Balsom proposed "The Wrexham Gas Company," and coupled with it the name of the class teacher, to which Mr. O. Evans suitably responded.

**Progress of the Chard Gas Undertaking.**—At the last meeting of the Chard Gas Committee, the Engineer and Manager, Mr. A. S. Brook, submitted a draft financial statement for the year ending March 31, showing a net profit, after paying interest and sinking fund, of £151. This was considered by the Committee very satisfactory, in view of the depression in the market for residuals. In moving the adoption of the report at the meeting of the Town Council last Thursday, the Mayor (Alderman S. H. Dening) said they were making steady and satisfactory progress. It had been pointed out, as proof that gas was holding its own in competition with other forms of lighting, that in Birmingham the gas-works had made a profit in the year of £70,000. At Chard, they had not these big figures to deal with; but they had actually made a greater advance *pro ratâ* with their size. For some time past, they had done without a rate-in-aid, and had been paying £1400 towards the principal and interest on their debt.


# Gas Cookers

*The*

## PARKINSON

**"CROWN" PATTERN**

## STANDS UNRIVALLED.

## SUBSTANTIALLY BUILT

**ON**

## SCIENTIFIC PRINCIPLES

## FOR LONG SERVICE.

## THE PARKINSON STOVE CO., LD.

**(Incorporating**

**Maughan's Patent Geyser Company).**

*BIRMINGHAM:*
**STOUR STREET.**

*LONDON:*
***Office and Show-Room:***
**129, HIGH HOLBORN, W.C.**

**Reductions in the Price of Gas.**—To their consumers in the Caversham district the Reading Gas Company are reducing the price of gas to 2s. 10d. per 1000 cubic feet; and, in consequence, the reduced charge for public lighting purposes will be 2s. 7d. At Wokingham, the Town Council are allowing a rebate of 5 per cent. off the price of gas used in the public lamps.

**Gas Profits in Aid of Rates.**—The Bolton Corporation Gas Committee on Friday resolved that the Finance Committee be informed that they could anticipate to receive £17,500 from the profits of the department for the past year in aid of rates, and also estimate that the sum of £20,000 would be available in aid of the rates from the next year's profits.

**Sir Christopher Furness and Co-Partnership.**—Sir Christopher Furness and two other gentlemen have acquired the Wingate Colliery, Durham, and the estate. Sir Christopher has asked the employees, numbering 15,000, to meet him on the 31st inst., when he will submit a scheme of working for obtaining more beneficial results to both workmen and employers. It is understood that he intends to establish the co-partnership scheme at the colliery.

The rates of York have been fixed at an increase of ½d. in the pound for the current year; Alderman Sir Joseph S. Rymer, the Chairman of the Finance Committee, remarking that, had it not been for the shortcomings of the Electricity Committee in the past, the Corporation rate would have been reduced 1½d. in the pound.

The Bethesda Urban District Council have decided to adopt a gas extension scheme prepared by Mr. Price White for the lighting of Rahub and Braichmelyn; an electric lighting scheme, also drafted up by him, being considered too expensive. It was resolved to ask Mr. Price White upon what terms he would prepare the plans and specifications and supervise the carrying out of the gas extension.

The Richmond Gas Stove and Meter Company, Limited, have forwarded a copy of their latest summer cooker booklet for general distribution to gas consumers. The booklet contains a selection only of the goods manufactured by the firm, though occupying 48 pages. A novel feature is a memoranda page facing the index page suitable for a customer to make notes. The "Humber" circulating boiler, made in two sizes, and which can be readily fixed to either supersede or supplement the coal-range boiler, occupies the centre of the booklet.

## WANTED, FOR SALE, CONTRACT, &c., ADVERTISEMENTS IN THIS WEEK'S "JOURNAL."

**Situations Vacant.**
ENGINEER AND MANAGER. Brighouse Gas Department. Applications by May 15.
MAIN AND SERVICE LAYER. No. 5092.

**Situations Wanted.**
ASSISTANT ON LARGE WORKS. No. 5093.
GAS MANAGER OR ASSISTANT. J. R. Love, care of "JOURNAL" Office.

**Research Fellowship.** University of Leeds. Particulars of Registrar.

**Plant, &c. (Second-Hand), for Sale.**
GAS-COOKERS. Coventry Gas Department.
GASHOLDER. Greenwood, Halifax.
PURIFIERS, &c. Sutton Gas Company.
PURIFIERS AND STATION METER, &c. Solihull Gas Company.

**Stocks and Shares.**
ALDERSHOT GAS AND WATER COMPANY. May 18.
CHIGWELL, &c., GAS COMPANY. May 18.
ILFORD GAS COMPANY. May 25.
TENDRING HUNDRED WATER COMPANY. May 18.
UXBRIDGE GAS COMPANY. May 18.

**TENDERS FOR**

**Benzol and Benzolized Creosote.**
LEIGH GAS AND WATER DEPARTMENT. Tenders by May 15.

**Coal and Cannel.**
BATLEY GAS DEPARTMENT. Tenders by May 24.
BRIDGNORTH GAS DEPARTMENT. Tenders by May 15.
CIRENCESTER GAS COMPANY. Tenders by May 31.
CLITHEROE GAS DEPARTMENT. Tenders by May 22.
EXMOUTH GAS COMPANY. Tenders by May 27.
FILEY URBAN DISTRICT COUNCIL. Tenders by May 24.
GLOUCESTER GASLIGHT COMPANY. Tenders by June 1.

**Coal and Cannel**—*(Continued)*.
GUILDFORD GASLIGHT AND COKE COMPANY. Tenders by May 21.
HAYWARDS HEATH GAS COMPANY. Tenders by May 18.
LEIGH GAS AND WATER DEPARTMENT. Tenders by May 15.
LLANDUDNO URBAN DISTRICT COUNCIL. Tenders by May 20.
MIDDLETON CORPORATION. Tenders by May 29.
NEWMARKET GAS COMPANY. Tenders by May 15.
OMAGH GAS DEPARTMENT. Tenders by May 31.
OSWALDTWISTLE GAS DEPARTMENT. Tenders by May 24.
SAFFRON WALDEN GAS AND WATER DEPARTMENT. Tenders by May 24.
SHREWSBURY GASLIGHT COMPANY. Tenders by May 22.
SOUTH STAFFORDSHIRE WATER WORKS COMPANY. Tender by May 17.
SUNBURY GAS COMPANY. Tenders by May 20.
SWADLINCOTE GAS DEPARTMENT. Tenders by May 26.
TEIGNMOUTH GAS DEPARTMENT. Tenders by May 31.
TIVERTON LIGHTING COMMITTEE. Tenders by June 4.
TORQUAY GAS DEPARTMENT. Tenders by May 24.
TYLDESLEY-WITH-SHAKERLEY GAS AND WATER DEPARTMENT. Tenders by May 31.
ULVERSTON GAS AND WATER DEPARTMENT. Tenders by May 14.
WHITTINGTON GAS COMPANY. Tenders by May 22.

**Conveying and Elevating Machinery, &c.**
SUTTON-IN-ASHFIELD GAS DEPARTMENT. Tenders by May 25.

**Exhauster and Engine, and Boiler, &c.**
SOWERBY BRIDGE GAS DEPARTMENT. Tenders by May 24.

**Gasholder (Re-Sheeting).**
CLECKHEATON URBAN DISTRICT COUNCIL. Tenders by May 27.

**General Stores—Lime, Block Tin, Pig Lead, Lead Pipe, &c.**
LEIGH GAS AND WATER DEPARTMENT. Tenders by May 15.
SWADLINCOTE GAS DEPARTMENT. Tenders by May 26.
TYLDESLEY-WITH-SHAKERLEY GAS AND WATER DEPARTMENT. Tenders by May 31.

**Main Laying, Fitting, &c.**
WEST DERBY UNION. Tenders by May 20.

**Mantles and Fittings.**
LONDON COUNTY COUNCIL. Tenders by May 25.

**Meters.**
TYLDESLEY-WITH-SHAKERLEY GAS AND WATER DEPARTMENT. Tenders by May 31.

**Pipes, &c.**
LEIGH GAS AND WATER DEPARTMENT. Tenders by May 15.
TYLDESLEY-WITH-SHAKERLEY GAS AND WATER DEPARTMENT. Tenders by May 31.

**Purifiers.**
TEIGNMOUTH URBAN DISTRICT COUNCIL. Tenders by May 31.

**Retort-House and Retort-Bench.**
SUTTON-IN-ASHFIELD GAS DEPARTMENT. Tenders by May 25.

**Sulphuric Acid.**
LEIGH GAS AND WATER DEPARTMENT. Tenders by May 15.

**Tar.**
LEIGH GAS AND WATER DEPARTMENT. Tenders by May 15.

## GAS COMPANIES' STOCK AND SHARE LIST.

**Referred to on p. 357.**

| Issue | Share. | When ex-Dividend. | Dividend or Dividend & Bonus | NAME. | Closing Prices. | Rise or Fall in Wk. | Yield upon Investment. |
|---|---|---|---|---|---|---|---|
| £ | | | p.c. | | | | £ s. d. |
| 590,000 | 10 | Apl. 16 | 10 | Alliance & Dublin 10 p.c. | 17¼–18 | .. | 5 11 1 |
| 298,955 | 10 | ,, | 7 | Do. 7 p.c. | 12½–12⅝ | .. | 5 9 10 |
| 310,000 | Stk. | Jan. 14 | 4 | Do. 4 p.c. Deb. | 98–100 | .. | 4 0 0 |
| 200,000 | 5 | Oct. 29 | 6½ | Bombay, Ltd. | 5⅝–6 | .. | 5 8 4 |
| 40,003 | 5 | ,, | 6½ | Do. New, £4 paid | 4¼–4½ | .. | 5 15 6 |
| 50,000 | 10 | Feb. 25 | 14 | Bourne-mouth Gas and Water } 10 p.c. | 284–294 | .. | 4 14 11 |
| 51,810 | 10 | ,, | 7 | Do. B 7 p.c. | 16⅜–17 | +⅛ | 4 2 4 |
| 53,200 | 10 | ,, | 6 | Do. Pref. 6 p.c. | 15⅜–15⅝ | .. | 3 15 7 |
| 380,000 | Stk. | ,, | 12½ | Brentford Consolidated | 248–250 | +½ | 5 0 0 |
| 300,000 | ,, | ,, | 9⅜ | Do. New | 188–190 | +½ | 5 0 0 |
| 50,000 | ,, | ,, | 5 | Do. 5 p.c. Pref. | 122–124 | .. | 4 0 8 |
| 206,250 | ,, | Dec. 11 | 4 | Do. 4 p.c. Deb. | 101–103 | .. | 3 17 8 |
| 220,000 | Stk | Mar. 12 | 10⅝ | Brighton & Hove Orig. | 211–213 | +½ | 5 1 0 |
| 246,320 | ,, | ,, | 7½ | Do. A Ord. Stk. | 153–155 | +½ | 5 0 0 |
| 460,000 | 20 | Apl. 16 | 10 | British | 42½–43 | +¼ | 4 13 0 |
| 109,000 | Stk. | Feb. 25 | 6 | Bromley, Ord. 5 p.c. | 115–117 | +½ | 5 2 7 |
| 165,700 | ,, | ,, | 4½ | Do. do. 3½ p.c. | 85–87 | .. | 5 3 6 |
| 500,000 | 10 | Oct. 15 | 7 | Buenos Ayres (New) Ltd. | 13⅜–14½ | .. | 4 18 3 |
| 250,000 | Stk. | Dec. 11 | 4 | Do. 4 p.c. Deb. | 94–96 | .. | 4 3 4 |
| 103,000 | 10 | — | — | Cape Town & Dis., Ltd. | 5–5⅜ | +¼ | — |
| 100,000 | 10 | — | — | Do. 4½ p.c. Pref. | 5⅛–5⅜ | .. | — |
| 52,000 | 50 | May 3 | 6 | Do. 6 p.c. 1st Mort. | 48–49* | +1 | 6 2 5 |
| 100,000 | Stk. | Dec. 30 | 4½ | Do. 4½ p.c. Deb. Stk. | 77–79 | .. | 5 13 11 |
| 157,150 | Stk. | Feb. 25 | 5 | Chester 5 p.c. Ord. | 109–111 | .. | 4 10 1 |
| 1,493,280 | Stk. | Mar. 12 | 5⅝ | Commercial 4 p.c. Stk. | 108–110 | +1⅛ | 4 14 6 |
| 560,000 | ,, | ,, | 5 | Do. 3½ p.c. do. | 102–104 | +1 | 4 16 2 |
| 475,000 | ,, | Dec. 11 | 3 | Do. 3 p.c. Deb. Stk. | 82–84 | +1 | 3 11 5 |
| 800,000 | Stk. | ,, | 6½ | Continental Union, Ltd. | 99–101 | −2 | 6 8 9 |
| 200,000 | ,, | ,, | 7 | Do. 7 p.c. Pref. | 139–141 | +½ | 4 19 3 |
| 492,270 | Stk. | — | 5 | Derby Con. Stk. | 121–123 | .. | 4 1 4 |
| 55,000 | ,, | — | 4 | Do. Deb. Stk. | 103–105 | .. | 3 16 2 |
| 148,995 | ,, | Mar. 31 | 5 | East Hull 5 p.c. Ord. | 97–99 | .. | 5 1 0 |
| 486,690 | 10 | Jan. 28 | 12 | European, Ltd. | 23⅝–24½ | .. | 4 19 0 |
| 354,060 | 10 | ,, | 12 | Do. £7 10s. paid. | 17½–18½ | .. | 4 18 5 |
| 15,161,545 | Stk. | Feb. 11 | 4/10/8 | Gas } 4 p.c. Ord. | 103–104 | .. | 4 7 0 |
| 2,600,000 | ,, | ,, | 3⅜ | light } 3½ p.c. max. | 88–89 | .. | 3 18 8 |
| 3,799,735 | ,, | ,, | 4 | and } 4 p.c. Con. Pref. | 105–107 | .. | 3 14 9 |
| 4,193,975 | ,, | Dec. 11 | 3 | Coke } 3 p.c. Con. Deb. | 85–86 | .. | 3 9 9 |
| 258,740 | Stk. | Mar. 12 | 4½ | Hastings & St. L. 3½ p.c. | 93–95 | .. | 5 0 0 |
| 82,530 | ,, | ,, | 6½ | Do. do. 5 p.c. | 118–120 | +½ | 5 4 2 |
| 70,000 | 10 | Apl 29 | 11 | Hongkong & China, Ltd. | 17½–17¾* | .. | 6 4 0 |
| 123,570 | Stk. | Mar. 12 | 6½ | Ilford "A" and "C" | 134–136 | .. | 4 15 7 |
| 65,780 | ,, | ,, | 5 | Do. "B" | 103–105 | .. | 4 15 3 |
| 51,000 | ,, | Dec. 30 | 4 | Do. 4 p.c. Deb. | 102–104 | .. | 3 16 11 |
| 4,940,000 | Stk. | Nov. 13 | 8 | Imperial Continental | 185–187 | +1 | 4 5 7 |
| 473,600 | Stk. | Feb. 11 | 3½ | Do. 3½ p.c. Deb. Red. | 95–97 | .. | 3 12 2 |
| 195,242 | Stk. | Mar. 12 | 6 | Lea Bridge Ord. 5 p.c. | 117–119 | .. | 5 0 10 |
| 561,000 | Stk. | Feb. 25 | 10 | Liverpool United A. | 225–227 | .. | 4 8 1 |
| 718,100 | ,, | ,, | 7 | Do. B | 168–170 | .. | 4 2 4 |
| 306,083 | ,, | Dec. 30 | 4 | Do. Deb. Stk. | 105–107 | .. | 3 14 9 |
| 75,000 | 5 | Dec. 11 | 6 | Malta & Mediterranean | 4⅜–5 | .. | 6 0 0 |
| 550,000 | 100 | Apl. 1 | 5 | Met. of } 5 p.c. Deb. | 100–102 | .. | 4 18 0 |
| 250,000 | 100 | ,, | 4½ | Melbourne } 4½ p.c. Deb. | 100–102 | .. | 4 8 3 |
| 541,920 | 20 | Nov. 13 | 3½ | Monte Video Ltd. | 12½–12⅝ | .. | 5 9 10 |
| 1,775,892 | Stk. | Feb. 25 | 4½ | Newc'tle & G'tesh'd Con. | 106½–107½ | −½ | 4 3 9 |
| 513,795 | Stk. | Dec. 30 | 3½ | Do. 3½ p.c. Deb. | 91–93 | .. | 3 15 3 |
| 15,000 | 10 | Feb. 25 | 10 | North Middlesex 10 p.c. | 19½–20 | .. | 5 0 0 |
| 55,940 | 10 | ,, | 7 | Do. 7 p.c. | 13–13½ | .. | 5 3 8 |
| 303,030 | Stk. | Apl. 29 | 8 | Oriental, Ltd. | 137–139* | .. | 5 15 1 |
| 60,000 | 5 | Mar. 31 | 8 | Ottoman, Ltd. | 6–6⅛ | .. | 6 8 0 |
| 31,830 | 53 | Feb. 25 | 13 | Portsea Island A. | 137–139 | +2 | 4 19 0 |
| 60,000 | 50 | ,, | 13 | Do. B. | 129–131 | .. | 4 19 3 |
| 100,000 | 50 | ,, | 12 | Do. C. | 119–121 | .. | 4 19 2 |
| 114,800 | 50 | ,, | 10 | Do. D and E. | 101–103 | .. | 4 17 1 |
| 398,490 | 5 | Oct. 29 | 7 | Primitiva Ord. | 7–7¼ | −⅛ | 4 16 7 |
| 796,980 | 5 | Jan. 28 | 5 | Do. 5 p.c Pref. | 5⅛–5⅜ | .. | 4 13 0 |
| 483,900 | 100 | Dec. 1 | 4 | Do. 4 p.c. Deb. | 95–97 | .. | 4 2 6 |
| 1,000,000 | 10 | Apl. 29 | 8 | River Plate Ord. | 14½–14⅝* | +⅛ | 5 8 6 |
| 312,650 | Stk. | Dec. 30 | 4 | Do. 4 p.c. Deb. | 95–97 | .. | 4 2 6 |
| 250,000 | 10 | Mar. 31 | 8 | San Paulo, Ltd. | 13½–14 | .. | 5 14 4 |
| 62,500 | 10 | ,, | — | Do. 6 p.c. Pref. | 11½–12 | .. | 5 0 0 |
| 125,020 | 50 | Jan. 2 | 5 | Do. 5 p.c. Deb. | 50½–51½ | +⅛ | 4 17 1 |
| 135,000 | Stk. | Mar. 12 | 10 | Sheffield A | 236–238 | .. | 4 4 0 |
| 269,984 | ,, | ,, | 10 | Do. B | 233–235 | .. | 4 5 1 |
| 523,500 | ,, | ,, | 10 | Do. C | 233–235 | −1 | 4 5 1 |
| 70,000 | 10 | Oct. 29 | 10 | South African | 14–14½ | .. | 6 17 11 |
| 6,429,895 | Stk. | Feb. 11 | 5/6/8 | South Met., 4 p.c. Ord. | 123–125 | .. | 4 5 4 |
| 1,895,445 | ,, | Jan 14 | 3 | Do. 3 p.c. Deb. | 85–86 | .. | 3 9 9 |
| 209,820 | Stk. | Mar. 12 | 8 | South Shields Con. Stk. | 152–154 | .. | 5 3 11 |
| 605,000 | Stk. | Feb. 25 | 5½ | S'th Suburb'n Ord. 5 p.c. | 120–122 | .. | 4 10 2 |
| 60,000 | ,, | ,, | 5 | Do. 5 p.c. Pref. | 122–124 | .. | 4 0 8 |
| 117,058 | ,, | Jan. 14 | 5 | Do. 5 p.c. Deb. Stk. | 124–126 | .. | 3 9 4 |
| 502,310 | Stk. | Nov. 13 | 5 | Southampton Ord. | 109–111 | .. | 4 10 1 |
| 120,000 | Stk. | Feb. 25 | 6½ | Tottenham } A 5 p.c. | 132–134 | .. | 5 0 9 |
| 423,940 | ,, | ,, | 5½ | and } B 3½ p.c. | 110–112 | +1 | 4 13 9 |
| 149,470 | ,, | Dec. 30 | 4 | Edmonton } 4 p.c. Deb. | 101–103 | .. | 3 17 8 |
| 182,380 | ,, | ,, | 8 | Tuscan, Ltd. | 8¾–9¼ | .. | 8 13 0 |
| 149,900 | 10 | Jan. | 5 | Do. 5 p.c. Deb. Red. | 101–103 | .. | 4 17 1 |
| 236,476 | Stk. | Feb. 25 | 5 | Tynemouth, 5 p.c. max. | 105–107 | .. | 4 13 6 |
| 255,626 | Stk. | Feb. 25 | 6½ | Wands- } B 3½ p.c. | 131–133 | .. | 4 17 9 |
| 79,416 | ,, | Dec. 30 | 3 | worth } 3 p.c. Deb. Stk. | 72–74 | .. | 4 1 1 |
| 895,872 | ,, | Feb. 25 | 5½ | West Ham 5 p.c. Ord. | 119–121 | −½ | 4 6 9 |
| 210,000 | ,, | ,, | 5 | Do. 5 p.c. Pref. | 125–127 | .. | 3 18 9 |
| 253,300 | ,, | Dec. 30 | 4 | Do. 4 p.c. Deb. Stk. | 107–109 | .. | 3 13 5 |

Prices marked * are "Ex div."

# NOTICES TO CORRESPONDENTS, ADVERTISERS, AND SUBSCRIBERS.

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## OXIDE OF IRON.

**O'NEILL'S OXIDE**

For GAS PURIFICATION.

LARGEST SALE OF ANY OXIDE.

SPENT OXIDE PURCHASED IN ANY DISTRICT.

GAS PURIFICATION & CHEMICAL CO., LD., PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.

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**"VOLCANIC" FIRE CEMENT.**

Resists 4500° Fahr. Best for GAS-WORKS.

ANDREW STEPHENSON 182 Palmerston House, Old Broad Street London, E.C. "Volcanism, London."

**"HALLITE" Asbestos High-Pressure** Sheeting.

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Offices: City Chambers, LEEDS.

Correspondence invited.

**KRAMERS AND AARTS WATER-GAS PLANT.**

K. & A. WATER-GAS COMPANY, LTD.

39, VICTORIA STREET, S.W.

FIDDES-ALDRIDGE

**SIMULTANEOUS Discharging-Charger.**

The one Machine which Discharges and Charges at One Stroke.

See Advertisement, May 4, p. II. of Centre.

ALDRIDGE AND RANKEN,

33, VICTORIA STREET, WESTMINSTER, S.W.

Telegrams: "MOTORPATHY, LONDON." Telephone: 5118 WESTMINSTER.

SPENCER'S PATENT HURDLE GRIDS.

**THE very best Patent Grids for Holding** Oxide Lightly.

See Illustrated Advertisement May 4, p. 273.

**OXIDE OF IRON FOR GAS PURIFICATION.**

Please Address Inquiries for Analysis and Prices to the

NEW WESTBURY IRON COMPANY, LTD.

WESTBURY, WILTS.

**SULPHURIC ACID for Sale, specially** suitable for making Sulphate of Ammonia.

BROTHERTON AND CO., LTD., Chemical Manufacturers, Works: BIRMINGHAM, LEEDS, WAKEFIELD, and SUNDERLAND.

**"GAZINE" (Registered in England and** Abroad). A radical Solvent and Preventative of Naphthalene Deposits, and for the Automatic Cleaning of Mains and Services.

It is also used for the enrichment of Gas.

Manufactured and supplied by C. BOURNE, West Moor Chemical Works, KILLINGWORTH, or through his Agent, F. J. NICOL, Pilgrim House, NEWCASTLE-ON-TYNE.

Telegrams: "DORIC," Newcastle-on-Tyne. National Telephone No. 2497.

**JOHN RILEY & SONS, Chemical Manu-** facturers, Hapton, near Accrington, are MAKERS of Special SULPHURIC ACID, for Sulphate of Ammonia Making. Highest percentage of Sulphate of Ammonia obtained from the use of this Vitriol, which has now been used for upwards of 50 Years. References given to Gas Companies.

**J. & J. BRADDOCK (Branch of Meters** Limited), Globe Meter Works, OLDHAM, and 54 & 47, Westminster Bridge Road, LONDON, S.E.

WET AND DRY GAS-METERS, PREPAYMENT METERS, STATION METERS, AND GOVERNORS.

REPAIRS RECEIVE PROMPT ATTENTION.

Telephones: 815 Oldham, and 2412 Hop, London.

Telegrams:— "BRADDOCK, OLDHAM," and "METRIQUE, LONDON."

## OXIDE OF IRON (BOG ORE).

ANY QUANTITY. ANY PORT. ANY STATION.

**DONALD M'INTOSH,**

110, CANNON STREET, LONDON.

## DUTCH OXIDE OF IRON.

SPENT OXIDE PURCHASED IN ANY DISTRICT.

**THE First Dutch Bogore Co., Ltd.,** NYMEGEN, HOLLAND.

*General Manager (for England and Wales)*—

CHARLES E. FRY, LEAMINGTON,

*General Manager (for Scotland)*—

J. B. MACDERMOTT, 11, Bothwell St., GLASGOW.

**LUX'S GAS PURIFYING MASS.**

See Advertisement on p. 343.

FRIEDRICH LUX, LUDWIGSHAFEN-AM-RHEIN.

"NUGEPE" GAS PLANT CEMENT.

**JOHN E. WILLIAMS AND CO.,**

LOWER MOSS LANE,

MANCHESTER, S.W.

For all Joints in connection with Oil-Gas Plant and Sulphate Plant.

For all Gas Joints.

For all Tar Joints.

For all Ammonia Joints.

GAS OILS.

**MEADE-KING, ROBINSON, & CO.**

Represent the Strongest Independent Refineries in America; also Petroleum Spirit for Gas Enrichment. 18, EXCHANGE STREET, MANCHESTER, and 11, OLD HALL STREET, LIVERPOOL.

**SULPHATE OF AMMONIA** SATURATORS and all LEAD and TIMBER WORK in Connection with Sulphate Plants.

We guarantee promptness, with efficiency for Repairs.

JOSEPH TAYLOR AND CO., CENTRAL PLUMBING WORKS, BOLTON.

Telegrams: SATURATORS, BOLTON. Telephone 0648.

**D. ANDERSON AND COMPANY,**

GAS LIGHTING ENGINEERS AND CONTRACTORS,

18 & 20, FARRINGDON ROAD, LONDON, E.C.

Telegrams: "DACOLIGHT LONDON." Telephone: 2336 HOLBORN.

**AMMONIACAL Liquor wanted.**

CHANCE AND HUNT, LTD., Chemical Manufacturers, OLDBURY, WORCS.

Telegrams: "CHEMICALS."

**PATENTS AND TRADE MARKS** PUBLICATIONS, "MERCHANDISE MARKS ACT, and Decisions thereunder," 1s.; "TRADE SECRETS v. PATENTS," 6d.; "DOCTRINE of EQUIVALENTS, Mechanical and Chemical," 6d.; "SUBJECT-MATTER of PATENTS," 6d.

MEWBURN, ELLIS, & PRYOR, Chartered Patent Agents, 70 & 72, Chancery Lane, London, W.C. Telegrams: "Patent London." Telephone: No. 243 Holborn.

**TO Gas Managers, &c., Wanted, Old** Condemned GAS-METERS, from 1-light to 1000-light, for destruction to re-claim Metals. Write for Prices, Stating Quantities and Sizes, and if Wets or Drys. Scrap Metals, Drosses, Metal Shop Sweepings, &c., also bought.

J. WILSON, Pleasant Grove, York Road, King's Cross, LONDON, N.

## OXIDE OF IRON.

(NATURAL.)

SPENT OXIDE PURCHASED.

BALE'S FIRE CEMENT.

PAINT FOR GAS-WORKS.

**BALE & CHURCH,**

5, CROOKED LANE, LONDON, E.C.

## SULPHURIC ACID.

**SPECIALLY prepared for the Manu-** facture of SULPHATE OF AMMONIA.

SPENCER CHAPMAN & MESSEL, LTD., with which is amalgamated WM. PEARCE & SONS, LTD. 96, Mark Lane, LONDON, E.C. Works: SILVERTOWN.

Telegrams: "HYDROCHLORIC, LONDON." Telephone: 341 AVENUE.

APPLY TO THE

**CHAIN BELT ENGINEERING CO.**

DERBY, ENGLAND,

FOR REALLY HIGH-CLASS

ELEVATORS AND CONVEYORS,

ALSO

DRIVING AND CONVEYOR CHAINS.

**AMMONIACAL Liquor wanted.**

BROTHERTON AND CO., LTD., Ammonia Distillers. Works: BIRMINGHAM, GLASGOW, LEEDS, LIVERPOOL, WAKEFIELD, AND SUNDERLAND.

**J. E. C. LORD, Ship Canal Tar Works,** Weaste, Manchester. Pitch, Creosote, Benzols, Toluol, Naphtha, Pyridine, all kinds of Cresylic Acid, Carbolic Acid, Sulphate of Ammonia, &c.

## TAR WANTED.

National Telephone 7002. Telegrams: "UPRIGHT."

Apply, THOMAS HORROCKS

Albert Chemical Works, BRADFORD, MANCHESTER.

Pitch, Creosote, Brick and Fuel Oils, Benzol, Solvent Naphtha, Sulphate of Ammonia.

**KINGS Patent Agency, Limited, 165,** Queen Victoria Street, London, E.C. Director Benj. T. King, A.I.M.E., British Chartered Patent Agent (Regd. by Exam.). Telep. 682 Central. Teleg. "Geologic," London. We sustain over quarter of a century's Experience and Reputation for Patenting Inventions and Registering Trade Marks throughout the World.

Write or call. We attend and advise you free.

## SULPHURIC ACID.

**SPECIALLY prepared for Sulphate of** AMMONIA Makers by

CHANCE AND HUNT, LIMITED,

Works: OLDBURY, WEDNESBURY, AND STAFFORD.

Address Correspondence and Inquiries to OLDBURY, WORCS.

Telegrams: "CHEMICALS, OLDBURY."

**GAS TAR wanted,**

BROTHERTON AND CO., LTD., Tar Distillers. Works: BIRMINGHAM, GLASGOW, LEEDS, LIVERPOOL, WAKEFIELD, AND SUNDERLAND.

**GAS PLANT for Sale—We can always** offer NEW and SECOND-HAND GAS APPARATUS, including Retorts and Fittings, Condensers, Exhausters, Scrubbers, Washers, Purifiers, Gasholders, Tanks, Valves, Connections, &c. Also a few COMPLETE WORKS. Compare Prices and Particulars before ordering elsewhere.

FIRTH BLAKELEY, SONS, AND COMPANY, LIMITED, Thornhill, DEWSBURY.

**ROBERT DEMPSTER & SONS, Ltd.,** Contractors for Complete CARBONIZING PLANTS and every description of GAS APPARATUS and ELEVATING and CONVEYING PLANT, Rose Mount Iron-Works, Elland.

**AMMONIA.** Consumers in any form are invited to correspond with Chance and Hunt, Ltd., Chemical Manufacturers, Oldbury, Worcs.

DESSAU PATENT VERTICAL RETORTS.

**FOR list of Installations, see "Journal,"** April 20, p. I. of Centre.

THE DESSAU VERTICAL RETORT COMPANY, Care of Mr. Charles Hunt, Consulting Engineer, 17, Victoria Street, Westminster, S.W.

**BRISTOL RECORDING GAUGES AND THERMOMETERS.**

J. W. & C. J. PHILLIPS, 23, College Hill, London, E.C., and 25, Bridge End, Leeds.

HYDRATED OXIDE OF IRON.

**PREPARED from Pure Iron.**
Twice as Rich as Bog Ore.
Gives no back Pressure.
The Cheapest in the Market.
Read Holliday and Sons, Ltd., Huddersfield.

**ADVERTISER (Age 25),** son of a well-known Gas Engineer, desires Situation as MANAGER of small Works, or ASSISTANT on large. Five Years' Practical Experience of Gas Manufacture and Distribution. Two Years Retort Setting. Competent Draughtsman, Chemist, and Book-Keeper. Excellent Testimonials. Disengaged.
Address Jas. R. Love, care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

**GERMAN Gas Engineer desires Situation** as ASSISTANT on large Works. Two Years' Practical Experience in Gas Manufacture and Distribution. Employed for nearly Three Years in the Drawing Offices and for Retort Setting by the first German Firms in this Line. Quite up in modern Retort-Houses. Competent Draughtsman and Good Chemist. No References.
Address No. 5093, care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

THE UNIVERSITY OF LEEDS.
(Department of Fuel and Gas Engineering.)

RESEARCH FELLOWSHIP.

**APPLICATIONS are invited, up to May** 28, for an OPEN FELLOWSHIP of £100 per Annum, established by the Institution of Gas Engineers for the Encouragement of Research in the Chemistry of Gases and Combustion.
For further Particulars, Apply to the Registrar.

**GAS-FITTER Main and Service Layer.** Good Permanent situation. Wanted, a Man of Experience, not under 30 Years of Age, Married, for a Gas-Works in a Provincial Town.
Apply, by letter, stating Age, Experience, where at present Employed, and Wages, to No. 5092, care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

BOROUGH OF BRIGHOUSE.

APPOINTMENT OF ENGINEER AND MANAGER OF GAS-WORKS.

**THE Gas Committee of the Corporation** invite APPLICATIONS, from duly Qualified Persons, for the post of ENGINEER and MANAGER to the Gas-Works.
Make of Gas, 170 Millions.
Salary, £250 per Annum.
Applications, in Candidates own Hand-writing, stating Age, Experience, present Occupation, when at Liberty, together with *copies* of Three recent Testimonials, to be delivered to the undersigned, endorsed on the outside "Gas Engineer," not later than Saturday, the 15th of May, 1909.
The person appointed is to devote his whole time to the Duties of this Office.
Canvassing, either directly or indirectly, will be a disqualification; but forwarding typed or printed copies of Application and Testimonials to Members of the Committee is permitted. Names and addresses may be obtained on Application with Stamped Addressed Foolscap Envelope.
James Parkinson, Town Clerk.
Town Clerk's Office, Brighouse, April 28, 1909.

**THE Coventry Corporation Gas Department** have FOR SALE about 170 WESTERN GAS-COOKERS, made by the Davis Gas Stove Company. These are excellent Gas-Cookers for Slot Consumers and are only offered for Sale because of being replaced by larger Cookers. They have been thoroughly Repaired, Cleaned, and Renovated, and supplied with New Grill Pans and Grids.
Price 12s. each, f.o.r. Coventry.
Fletcher W. Stevenson, Engineer and General Manager.
Gas-Works, Coventry, April, 1909.

**FOR SALE—A Gasholder of 320,000** Cubic Feet Capacity (Condition as new), Columns and Girders. Exceptionally low Price to clear.
Address Greenwood, Leamington Avenue, Halifax.

**FOR SALE—Three Purifiers, by Newton,** Chambers, and Co., 20 ft. square by 5 ft. deep. Planed Joints, 18-inch Valves and Connections, with Bye-Passes, Travelling and Lifting Gear. In Good Condition. Being Removed for Extension.
Apply to the Secretary, Gas Office, Sutton, Surrey.

**FOR SALE—Four 8-feet Square by 4 ft.** 6 in. deep PURIFIERS, with 8-inch diameter Valves and Connections, and Lifting Gear; also STATION METER, with 6-inch diameter Valves and Connections. All in good condition. Replaced by larger Plant.
Apply to the Manager, Gas Company, Solihull, Birmingham.

**FOR SALE, Cheap, the undermentioned** GAS PLANT:—
Kirkham's "STANDARD" WASHER-SCRUBBER to pass 250,000 cubic Feet per diem.
GASHOLDER, 3-Lift, 50 ft. dia., cap. 128,000 c.f.
EXHAUSTERS, 10,000 and 8000 cub. ft. per Hour.
4-inch Cast-Iron Vertical CONDENSER.
Wrought-Iron SCRUBBER, 9 ft. high by 3 ft.
Donkin's VALVES, 12-inch, 10-inch, 6-inch.
Apply to Samuel While and Son, 60, Queen Victoria Street, London, E.C.

SOUTH STAFFORDSHIRE WATER-WORKS COMPANY.

TENDER FOR ENGINE SLACK.

**THE Company are prepared to receive** TENDERS for the Supply of ENGINE SLACK, at their various Pumping-Stations, for Twelve Months from the 1st of July, 1909.
Forms of Tender, giving Particulars as to the Quantity of Coal to be delivered at the various Stations, can be obtained on Application to me.
Tenders, made out on the Forms provided, and endorsed "Tenders for Slack," must reach me at latest by Twelve noon on Monday, May 17, 1909.
The Company do not bind themselves to accept the lowest or any Tender.
H. Ashton Hill, M.Inst.C.E., Engineer.
Paradise Street, Birmingham.

GUILDFORD GASLIGHT AND COKE COMPANY.

COAL.

**THE Directors of the above Company** are prepared to receive TENDERS for the Supply of 12,000 Tons of Durham and South Yorkshire GAS COAL (Screened or Unscreened), to be delivered free at Guildford Station, between the 1st of July, 1909, and the 30th of June, 1910, in such quantities and at such times as required.
The Directors reserve the right to accept the whole or any portion of the Quantity offered, and do not bind themselves to accept the lowest or any Tender.
Tenders to be endorsed "Tender for Coal," and to be sent to Ferdinand Smallpiece, Esq., J.P., Chairman of the Gas Company, on or before Ten a.m. Friday, the 21st of May, 1909.
By order, William Titley, Secretary.
Gas Offices, Guildford, May 1, 1909.

BOROUGH OF LEIGH.
(Gas and Water Departments.)

**THE Gas and Water Committee of the** above Corporation are prepared to receive TENDERS for the Supply of the following GOODS:—
1—14,000 Tons of Screened and Unscreened GAS COAL, NUTS, and SLACK.
2—LEAD PIPING (Gas and Water).
3—VITRIOL.
4—LIME.
5—BENZOL.
6—WROUGHT-IRON TUBES and FITTINGS.
7—2-inch, and 4-inch, CAST-IRON PIPES and SPECIALS.
Forms of Tender may be had on Application from the undersigned, to whom all Inquiries must be addressed; and all Offers must be made on the Official Forms, or they will not be considered.
Sealed and endorsed Tenders must be delivered to Mr. Stanley Wilson, Town Clerk, Town Hall, Leigh, Lancashire, on or before Twelve o'clock noon on Saturday, the 15th day of May, 1909.
The Corporation do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right to divide any Tender.
James Gibson, Engineer and Manager.
Gas and Water Offices, Leigh, Lancashire, April 28, 1909.

BOROUGH OF LEIGH.
(Gas Department.)

**THE Gas and Water Committee of the** above Corporation invite TENDERS for the Removal of the Surplus TAR produced at their Works during the Year ending June 30, 1910.
Approximate Quantity, 850 Tons.
Forms of Tender and any further Information may be had on Application from the undersigned, to whom all Inquiries must be addressed.
Sealed Tenders, endorsed "Tender for Tar," must be delivered to Mr. Stanley Wilson, Town Clerk, Town Hall, Leigh, Lancs., on or before Twelve o'clock Noon, on Saturday, the 15th day of May, 1909.
The Corporation do not bind themselves to accept the highest or any Tender.
James Gibson, Engineer and Manager.
Gas and Water Offices, Leigh, Lancs., April 28, 1909.

COUNTY OF LONDON.

**THE London County Council invite** TENDERS for the Supply and Delivery of INCANDESCENT GAS MANTLES and FITTINGS.
Full Particulars as to the Conditions of Contract and as to Inspection of Samples appear on the Official Forms of Tender, which may be obtained on Application to the Clerk of the Council, County Hall, Spring Gardens, S.W., and no Tender received after Eleven a.m. on Tuesday, the 25th of May, 1909, will be considered.
G. L. Gomme, Clerk of the London County Council.
County Hall, Spring Gardens, S.W., May 6, 1909.

BOROUGH OF TORQUAY.

**THE Gas-Works Committee of the** Torquay Town Council are prepared to receive TENDERS for the Supply of 2000 to 3000 Tons of approved GAS COAL, delivered free into Stores at St. Mary Church Gas-Works.
Further Particulars and Forms on which Tenders must be submitted may be obtained at my Office, Town Hall, Torquay.
Sealed Tenders, endorsed "Tender for Coal," to be sent to the undersigned not later than Noon on Monday, May 24, 1909.
The lowest or any Tender will not necessarily be accepted.
Fredk. S. Hex, Town Clerk.
Town Hall, Torquay, May 8, 1909.

BOROUGH OF BATLEY.

TENDERS FOR GAS COAL.

**THE Corporation are prepared to re**ceive TENDERS for the Supply and Delivery at their Gas-Works of 20,000 Tons of Screened GAS COAL.
Conditions and Form of Tender may be obtained on Application to the Manager of the Gas-Works.
Sealed Tenders, endorsed "Tender for Gas Coal," to be delivered to me on or before Monday, the 24th of May inst.
The Corporation do not bind themselves to accept the lowest or any Tender, and may accept any Tender for a part only of the specified quantity.
By order, J. H. Craik, Town Clerk.
Town Hall, Batley, May 6, 1909.

BOROUGH OF SAFFRON WALDEN.

TENDERS FOR COAL.

**THE Gas and Water Undertaking Com**mittees of the Town Council are prepared to receive TENDERS for the Supply of about 2000 Tons of Best Screened GAS COAL, and about 200 Tons of Best Hand-Picked Hard STEAM COAL respectively, for the Twelve Months ending the 30th of June, 1910.
Full Particulars can be obtained on Application to Mr. A. H. Forbes, Borough Surveyor.
Sealed Tenders, endorsed "Tender for Gas Coal," or "Tender for Steam Coal," as the case may be, to be addressed and sent to me, the undersigned, not later than Five o'clock in the afternoon on Monday, the 24th day of May inst.
The lowest or any Tender will not necessarily be accepted.
W. Adams, Town Clerk.
Saffron Walden, May 7, 1909.

SHREWSBURY GASLIGHT COMPANY.

TENDERS FOR COAL.

**THE Directors of the Shrewsbury Gas**light Company invite TENDERS for the Supply of about 19,000 Tons of Screened GAS COALS, to be delivered free at the Great Western or London and North Western Goods Yard, Shrewsbury, during the Year commencing July 1, 1909, and ending June 30, 1910.
The Directors reserve to themselves the right to divide the Quantity into Two or more Contracts, and do not bind themselves to accept the lowest or any Tender.
Tenders must be made on Forms (containing further Particulars) which may be obtained on Application at the Company's Works or by post, and must be sent to the undersigned on or before the 22nd day of May, 1909.
By order, Wm. Belton, A.M.I.C.E., Secretary and Manager.
Gas-Works, Shrewsbury, April 24, 1909.

SOWERBY BRIDGE URBAN DISTRICT COUNCIL.

**THE Gas Committee are prepared to re**ceive TENDERS:—
1—For the Supply, Delivery, and Fixing of a New EXHAUSTER and ENGINE, with all necessary Connections and Valves, for their Luddenden-Foot Gas-Works.
2—For the Supply, Delivery, and Fixing of a LANCASHIRE BOILER, with all the Mountings, Furnace Fittings, &c., for their Sowerby Bridge Gas-Works.
Both to be in accordance with Particulars and Specifications which can be obtained, with any further Information, on Application to the Engineer, Mr. A. W. Bissell, Gas-Works, Sowerby Bridge.
The Council do not bind themselves to accept the lowest or any Tender.
Sealed Tenders, endorsed "Exhauster or Boiler," to be received by the undersigned not later than Twelve Noon on Monday, May 24, 1909.
R. W. Evans, J.P., Solicitor and Clerk to the Council.
Commercial Bank Chambers, Halifax.

## BOROUGH OF TIVERTON.

TENDERS FOR COAL.

**THE Lighting Committee are prepared** to receive TENDERS for the whole or part of 4000 Tons of Freshly-Wrought GAS COAL, Screened or Uncreened, including NUTS, giving Full Particulars of Coal with Analysis, and to be Delivered at the Railway Siding adjoining their Gas-Works at Tiverton during One Year, and in such Quantities as may be directed by their Manager.

Further Particulars and Form of Tender (which must be used) may be obtained on Application to Mr. Clark Jeffery, Gas Manager.

Sealed Tenders, endorsed "Tender for Gas Coal, and addressed to the undersigned, must be received on or before Friday, the 4th day of June, 1909.

The Committee do not bind themselves to accept the lowest or any Tender.

By order,
C. M. Hole,
Town Clerk.

Tiverton, May 7, 1909.

## URBAN DISTRICT COUNCIL OF OSWALDTWISTLE.

TENDERS FOR GAS COAL.

**THE above Council invite Tenders for** the Supply of the whole or part of 6000 Tons of NUTS, Unscreened COAL, or SLACK, to be delivered during the Year ending the 31st of May, 1910.

Conditions and Form of Tender may be obtained on Application to the Manager, Mr. J. H. Davies, Gas-Works, Church, Lancashire.

Sealed Tenders, endorsed "Tender for Coal," must be delivered to the undersigned not later than Twelve o'clock at noon on Monday, the 24th inst.

The Council do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right to divide the Contract in any manner they think fit.

B. T. Westwell,
Clerk to the Council.

Town Hall, Oswaldtwistle,
Lancashire, May 7, 1909.

## TEIGNMOUTH URBAN DISTRICT COUNCIL.

TENDERS FOR NEW PURIFIERS.

**TENDERS are invited by the above** Council for the Provision and Erection of Four 16 feet Square Connectionless and Luteless PURIFIERS, fitted with Pickering's Patent Valve.

A Copy of the Drawings and Specifications may be obtained from Mr. J. Alex. Gray, the Gas Engineer, on payment of the Sum of £1 1s. which will be returned on receipt of a *bond-fide* Tender.

Sealed Tenders, endorsed "Purifiers," and addressed to the undersigned, to be delivered at the Town Hall, Teignmouth, not later than Monday, the 31st day of May, 1909.

The Council do not bind themselves to accept the lowest or any Tender.

A. Percival Dell,
Clerk to the Council.

Town Hall. Teignmouth,
May 5, 1909.

## TEIGNMOUTH URBAN DISTRICT COUNCIL.

**THE Gas Department of the above** Council invite TENDERS for the Supply of 3800 Tons of Good GAS COAL, Screened or Unscreened. The same to be supplied to the requirements of the Council between the 31st day of July, 1909, and the 30th day of June, 1910.

The Coal must be fresh Wrought and free from all Impurities.

No Special Tender Form will be issued.

Tenders must be accompanied by a full Description and Practical Working Analysis of the Coals quoted, and may be either f.o.b., c.i.f. Teignmouth Harbour, f.o.r. Teignmouth Railway Station, or delivered into the Gas-Works Store. Seaborne Coal to be delivered in 200-400 Ton Sailing Vessels only.

Sealed Tenders, endorsed "Gas Coals," to be addressed to A. Percival Dell, Esq., Clerk to the Council, Town Hall, Teignmouth, and delivered not later than Monday, the 31st day of May, 1909.

The Committee do not bind themselves to accept the lowest or any Tender.

By order,
J. Alex. Gray,
Gas Manager.

Gas-Works, Teignmouth,
May 6, 1909.

## SWADLINCOTE DISTRICT URBAN DISTRICT COUNCIL.

(Gas Department.)

**THE Gas Committee of the above** Council are prepared to receive TENDERS for—

LIME.

The Supply of about 150 Tons of Best Hand-Picked Buxton LIME, to be delivered at the Gas-Works in such Quantities and at such times as may be required during the Twelve Months ending June 30, 1910.

GAS COAL.

The Supply of 4000 Tons (more or less) of Best Screened GAS COAL, to be delivered in such Quantities as may be required during the Twelve Months ending June 30, 1910.

All Particulars and Forms of Tender may be obtained from Mr. G. B. Smedley, C.E., the Engineer and Manager.

Tenders must be on the Council's Forms and Envelope, and accompanied by Analysis, and must be delivered to the undersigned on or before Twelve noon, May 26, 1909, endorsed "Lime," or "Gas Coal," as the case may be.

The Council do not bind themselves to accept any Tender.

W. A. Musson,
Clerk to the Council.

Gas-Works, Swadlincote,
May 6, 1909.

## OMAGH URBAN DISTRICT COUNCIL.

**THE above Council are prepared to re**ceive TENDERS for the Supply and Delivery of 2000 Tons, more or less, of Best Screened GAS COAL, for delivery during the Year ending June 30, 1910.

The Council reserve to themselves the right to divide the Contract as they may think fit.

Tender Forms may be had on Application to the undersigned, to whom all Tenders are to be sent, endorsed "Coal," on or before May 31, 1909.

Wm. M. Downie,
Manager.

Gas Office, Omagh,
May 4, 1909.

## TYLDESLEY-WITH-SHAKERLEY URBAN DISTRICT COUNCIL.

TENDERS FOR COAL, &c.

**THE Gas and Water Committee invite** TENDERS for the Supply, during the Twelve Months ending June 30, 1910, of the following:—

4000 Tons of GAS COAL, Cobbles or Nuts.
LEAD PIPE (Gas and Water) and PIG LEAD.
Cast-Iron PIPES and SPECIALS.
Wrought-Iron TUBES and FITTINGS.
GAS METERS.
BUXTON LIME (Gas-Works and Sewage Works).

Forms of Tender and all Particulars may be obtained from the undersigned.

Sealed endorsed Tenders to be delivered to Mr. W. J. Matthews, Clerk to the Council, Tyldesley, on or before Monday, May 31, 1909.

The Council do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right to divide any Contract.

H. R. S. Williams,
Engineer and Manager.

Gas and Water Works,
Tyldesley, May 8, 1909.

## BRIDGNORTH CORPORATION GAS-WORKS.

TO COLLIERY PROPRIETORS AND OTHERS.

**THE Gas Committee are prepared to** receive Sealed TENDERS for the Supply of Screened GAS COAL or Washed GAS NUTS, including Carriage to the Bridgnorth Railway Station, for One Year from, or soon after, the end of July next.

Evidence as to Quality of Coal must accompany each Tender.

The Coal or Nuts must be well Screened or Washed, free from Bats, Binds, and other Refuse, and be freshly got at the time for delivery.

Quantity required: About 2600 Tons in proportionate deliveries as directed—say, 70 per cent. during Winter Months, and 30 per cent. during Summer Months.

Sealed and marked Tenders must be sent to the undersigned not later than Saturday, the 15th of May.

The Committee reserve to themselves the right to divide the Quantity into Two or more Contracts, and do not bind themselves to accept the lowest or any Tender.

Official Forms for Tender are not furnished.

By order,
J. H. Cooksey,
Town Clerk,
Secretary.

Bridgnorth, April 29, 1909.

## FILEY URBAN DISTRICT COUNCIL.

TENDERS FOR COAL.

**THE Council invite Tenders for the** Supply of about 1850 Tons of GAS COAL in the Thirteen Months ending the 30th of June, 1910.

Delivery to be made at the North-Eastern Railway Company's Depôt, Filey.

The Coal must be of Good Quality, suitable for Gas making, and free from Bats, Pyrites, and other Refuse.

The Tender may be for Screened, Unscreened Coal, or Nuts.

Payments will be made Monthly.

The following are the approximate Monthly Quantities required:—

| 1909. | | 1910. | |
|---|---|---|---|
| June | 110 Tons. | January | 175 Tons. |
| July | 140 ,, | February | 130 ,, |
| August | 225 ,, | March | 130 ,, |
| September | 190 ,, | April | 100 ,, |
| October | 145 ,, | May | 100 ,, |
| November | 150 ,, | June | 90 ,, |
| December | 180 ,, | | 725 |
| | 1140 | | |

Tenders to be addressed to the Chairman, Urban Council, Filey, and to be sent in on or before the 24th of May, 1909.

Henry Tobey,
Engineer.

Malton.

**THE Llandudno Urban District Council** invite TENDERS for the Supply of about 7000 Tons of Best Screened GAS COAL and about 500 Tons of CANNEL. The Coal must be capable of producing a minimum of 10,600 Cubic Feet of 17-Candle Power Gas per Ton.

The whole will be required to be delivered between the 1st of July next and the 30th of June, 1910, at the Llandudno Station of the London and North-Western Railway, in such Quantities and at such periods as may be ordered from time to time.

Form of Tender may be obtained on Application to the undersigned; and only such Tenders as are on the prescribed form will be considered.

In every case where the Particulars asked for are not given, the Tenders will be thrown out and not considered.

Tenders, endorsed "Gas Coal, &c.," must be sent to the undersigned not later than the 20th day of May, 1909.

The Tender of any Person or Firm who, personally or through an Agent, Canvasses any of the Officers or Members of the Council will be rejected.

The Council do not bind themselves to accept the lowest or any Tender.

Alfred Conolly,
Clerk to the Council.

Town Hall, Llandudno,
May 5, 1909.

## ULVERSTON URBAN DISTRICT COUNCIL.

TENDERS FOR COAL AND CANNEL.

**THE Gas and Water Committee are** prepared to receive TENDERS for the Supply of Best Screened GAS COAL and CANNEL, for a period of One, Two, or Three Years, commencing the 1st of July, 1909.

Parties Tendering must give full Particulars of the Coal and Cannel they propose to Supply, and name the Pit from which the same will be raised.

Further Information and Forms of Tender may be obtained from the undersigned.

Sealed Tenders, endorsed "Tender for Coal," and addressed to the Chairman of the Gas and Water Committee, to be sent in not later than the 14th inst., at Noon.

The Committee do not bind themselves to accept the lowest or any Tender.

Jno. Swan,
Engineer and Manager.

## SUTTON-IN-ASHFIELD URBAN DISTRICT COUNCIL.

GAS-WORKS EXTENSION.

**PERSONS desirous of Tendering for** the Construction of RETORT-HOUSE, RETORT-BENCH, COAL ELEVATOR AND CONVEYOR, HOPPERS, &c., in Connection with the above, are requested to send their names and addresses to Messrs. Corbet Woodall and Son, Palace Chambers, Bridge Street, Westminster, S.W., together with a Deposit of £3 3s. for Copies of Drawings, Specification, and Form of Tender. The Deposit will be returned on receipt of a *bond-fide* Tender.

Tenders must be delivered to the undersigned not later than Five p.m. on Tuesday, May 25.

The lowest or any Tender will not necessarily be accepted.

By order,
John D. Fidler,
Clerk to the Council.

Council Offices,
Sutton-in-Ashfield.

## HAYWARDS HEATH DISTRICT GAS COMPANY.

GAS COAL.

**THE Directors of the above Company** invite TENDERS for the Supply of about 4000 Tons (more or less) of GAS COAL, to be delivered in such quantities and at such periods as may be ordered until the 30th of June, 1910.

The Coal required is to be Unscreened, and to be delivered in Trucks, free at Haywards Heath Railway Station (London, Brighton, and South Coast Railway), either from the South Yorkshire or Durham Coalfields.

Payment, net Cash Monthly.

Tenders are to state the name of the Pits from which the above description of Coal will be supplied, the same to be Fresh Wrought and free from Slate, and to the entire satisfaction of the Company's Manager.

The Board have no Special Form of Tender, and do not bind themselves to accept the lowest or any Tender.

Tenders are to be received by me on or before the 18th of May next, and endorsed "Tender for Gas Coal."

(Signed) Russell Cory,
Secretary.

85, Gresham Street, E.C.

## SUNBURY GAS CONSUMERS' COMPANY LIMITED.

TENDERS FOR GAS COAL.

**THE Directors of the above Company** invite TENDERS for the Supply of about 2500 Tons of GAS COAL, and 100 to 150 Tons of Boghead CANNEL COAL for Delivery between the 1st of August, 1909, and the 31st of July, 1910, in such Quantities as may be required by the Company's Manager. Prices to be stated for Delivery, Free of all Charges, either alongside a riverside Wharf at Sunbury or at Sunbury Railway Station.

Sealed Tenders, endorsed "Tender for Gas Coal," and accompanied by Practical Working Analyses, to be addressed to the Chairman of the Company, and delivered at the Company's Offices on or before the 20th inst.

All further Information required may be obtained on Application to Mr. S. Bark, the Company's Manager.

The Directors do not bind themselves to accept the lowest or any Tender.

By order,
J. W. Wynn,
Secretary.

May 8, 1909.

## GLOUCESTER GASLIGHT COMPANY.

TENDERS FOR GAS COAL.

**THE Directors of the above Company** invite TENDERS for the Supply of about 34,000 Tons of GAS COAL for One Year from the 1st day of July next, in such Monthly Quantities as may be required by the Company.

Tenders to State the Price Delivered at the Midland Railway Sidings, Hempsted, near Gloucester, or the Great Western Railway Wharf, Llanthony, Gloucester; or, if sent (as preferred) by Water, the price f.o.b. and also the Price Delivered at the Gas Company's Wharf on the Gloucester and Berkeley Canal.

Further Particulars and Forms of Tender may be obtained from the undersigned.

Sealed Tenders, endorsed "Tender for Coal," specifying the Description and Quality of the Coal, to be addressed to the Chairman, Gas Offices, Eastgate Street, Gloucester, and delivered not later than Tuesday, the 1st day of June next.

The Directors reserve to themselves the right to accept the whole or any portion of any Quantity offered, and do not bind themselves to accept the lowest or any Tender.

By order,
William E. Vinson,
Secretary.

Gas Offices, Gloucester,
May 3, 1909.